



Innovation Exhibition  
President House, New Delhi

7 - 13 March 2014



National Innovation Foundation - India



## **National Innovation Foundation - India**

Department of Science and Technology, Govt. of India

Satellite Complex, Prem Chand Nagar Road, Satellite

Ahmedabad 380015 Gujarat, India

Tel +91-79-2673 2456/2095 Fax +91-79-2673 1903, +91-11-43851803

Web [www.nif.org.in](http://www.nif.org.in) Email [info@nifindia.org](mailto:info@nifindia.org)

## **Innovation Exhibition**

In November 2009, in her Award address during the 5<sup>th</sup> National Award Function, the Former President Smt. Pratibha Devisingh Patil invited National Innovation Foundation - India (NIF) to set up an exhibition of innovations at the President House during the period Mughal Garden was open to the public. Smt. Pratibha Devisingh Patil had earlier declared the decade 2010-2020 as the Decade of Innovation. The first exhibition of innovations was organized in March 2010 by NIF and hosted by the Hon'ble President at Rashtrapati Bhavan and has been organized since then. This exhibition conveys Hon'ble President's commitment to support the cause of inclusive innovation. Getting honour from the Hon'ble President in the President House is a once in a lifetime opportunity for grassroots innovators. Such recognition at the highest level underlines the deep commitment the nation has to the cause of grassroots creativity and inclusive innovation. This has generated enormous goodwill for NIF and innovators in the mind of larger society.

The innovation exhibition also provides an opportunity to students, investors, entrepreneurs, designers, etc., to join the movement and help in taking green grassroots innovations to the society.

## **National Innovation Foundation-India working towards making a creative, compassionate and collaborative India**

The National Innovation Foundation – India (NIF) set up in 2000 by the Department of Science and Technology, building upon the Honey Bee philosophy<sup>1</sup>, has taken major initiatives to serve the knowledge-rich, economically poor people of the country. It is committed to making India innovative by documenting, adding value, protecting the intellectual property rights of the contemporary unaided technological innovators, as well as of outstanding traditional knowledge holders on a commercial as well as non-commercial basis.

With major contribution from the Honey Bee Network, NIF has been able to build up a database of more than 1, 84,000 technological ideas, innovations and traditional knowledge practices (not all unique, not all distinct) from over 555 districts of the country. NIF has till date recognised more than 590 grassroots innovators and school students at the national level in its various award functions. Through the collaborations with various R&D and academic institutions, Agricultural and Veterinary Universities and others, NIF has helped in getting thousands of grassroots technologies validated and value added. It has also set up a Fabrication Laboratory (Fab Lab) with the help of MIT, Boston, for product development apart from strengthening in-house research and development facilities for the initial validation of herbal technologies. *Pro bono* arrangement with patent firms has helped NIF to file over 630 patents (including eight filed in USA and twenty seven PCT applications) on behalf of the innovators and outstanding traditional knowledge holders of which thirty five patents have been granted in India and five in the USA. It has also filed applications for twenty one farmers' developed plant varieties at the PPV&FR Authority. Micro Venture Innovation Fund (MVIF) at NIF with the support of SIDBI has provided risk capital of about Rs 3.2 crores to 186 projects, which are at different stages of incubation. NIF has received nearly six hundred product inquiries from around fifty five countries for various technologies, NIF has succeeded in commercialising products across countries in six continents apart

from being successful in materialising seventy cases of technology licensing to eighty licensees with the help of partner agencies.

NIF has proved that Indian innovators can match anyone in the world when it comes to solving problems creatively, where they perform better than rest is in generating greater sustainable alternatives by using local resources frugally. The Grassroots to Global (G2G) model that NIF is propagating is all set to change the way the world looks at the creativity and innovations at grassroots.

<sup>1</sup> The Honeybee collects pollen from the flowers and in the process links one flower to another enabling cross-pollination. Similarly, the Honey Bee Network strengthens people-to-people contacts, learning and networking by pooling the solutions developed by individuals across the world in different sectors and sharing in local language. The network acknowledges the innovators, knowledge producers and communicators so that they do not remain anonymous. It also tries to ensure that a fair share of benefits arising from commercial exploitation of local knowledge and innovations reaches the innovators and knowledge providers.

## Gujarat Technology Commons Pavilion

Like many other drought prone regions, Amreli region (Gujarat) also has a severe shortage of fodder leading to decline in the availability of bullocks for farming operations. Mansukhbhai Jagani was approached by a friend to find some solution for scarcity of draft power. Looking at the motorcycle his friend was riding, Mansukhbhai thought of adapting it as a ploughing machine. That's how 'Bullet Santi' was born. 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 various farm implements. This meets various needs such as ploughing, weeding and sowing seeds. Many other users and innovators copied this technology and today over 70 fabricators are making various versions of the santi and there are an estimated 10, 000 variants in the field right now. This has led to the evolution of the concept of 'Technology Commons' implying no restrictions for other innovators to copy and adapt. But commercial firms will need license from members of the 'Technology Commons'.





**Karnataka**



## **Arecanut cutter**

Wazeer Hayath

Traditionally areca-nut cutting work is done manually using cutters. The machine is an automatic machine which cuts areca-nut into smaller pieces. There is an inclined grader cum feeder, which sorts and feeds the areca-nuts into the cutting machine. The feeder has a vibrating system, which agitates the areca-nuts, separating them by passing through appropriate section according to their size.

The grader feeds areca-nuts into the machine in six channels (for six different sizes of the nuts). The areca-nuts are led into an opening and pushed downwards towards cutters, which cut the areca-nuts into pieces based on their size. The six cutters cut the areca-nuts into 5, 8, 16, 24, 20, 12 pieces, which get collected in a bucket below.





## Kerala



### Reversible reduction gear for marine diesel engine and Z- drive propeller

B Mohanlal

Mohanlal used to observe the inconvenience of the local fisherman while fishing with boats using petrol start kerosene run engine, with an inbuilt gearbox. The diesel engine ones had a long tail propeller system without gearbox, which affects maneuverability. The kerosene run engines consume high amount of fuel and pollute the water, which affects the reproductive capacity of fish. Moreover beach landing is very difficult using the conventional inboard marine diesel engines.

After rigorous research and development Mohanlal could develop a gearbox and manually tiltable Z-drive system for small capacity diesel engines to overcome the above problems.



## Madhya Pradesh



### Sugarcane bud planter and sugarcane bud chipper

Roshan Lal Vishwakarma

The innovator has developed tractor operated sugarcane bud planter using which plantation cost is estimated to reduce to Rs 800/acre from Rs 6000/ acre using labour. As per claims the field capacity of the machine is 1500-300 buds per hour. The plant to plant sowing distance can also be adjusted according to the requirements.

Roshanlal has also developed up a sugarcane bud chipper. The device consists of a self made platform, semi circular cutting blade, linkage system and a handle. By pressing the handle, the unit removes the bud from the node, which is then used for planting/tissue culture. The technology has been taken up



by Tata Agrico for co-branding and marketing through its outlets under an agreement with NIF. Roshanlal has also come up with a foot operated and motorized version of the bud chipper.

**Kerala**



**Nutmeg desheller**

Sachidanandan V R

Traditionally nutmeg is decorticated manually using a hammer or mechanically using a cracking hand tool. The dried seeds are cracked by tapping the end of the nuts with a small wooden mallet. Another method for shelling the nuts is to tip them onto a sloping cement floor from a height of three to four metres. This is a time and labour consuming process. The innovator has come up with a desheller, which addresses these issues and reduces drudgery as well.



## Jammu and Kashmir



### Walnut cracker

Mushtaq Ahmad Dar

Manual cracking of walnuts involves a lot of time and drudgery. Mushtaq has come up with a walnut cracking machine to process dry walnuts of various sizes, shapes and thickness to crack them open without damaging the fruit inside. The cracker can process approximately 80 kg of walnuts/h with an efficiency of about 85% while the peeler has a capacity of 70 kg of green walnuts/h.



## Jammu and Kashmir



### Improved iron cutter

Abdul Rahman Sheikh

Abdul Rahman Sheikh, a mechanic aged 50 years, has developed an iron cutter capable of performing four kinds of motions and cutting iron precisely from different angles. Its cutting range varies between one to eight inch (pipe, guarder etc) and it can cut flat sheets of any length.



**Maharashtra**



## **Innovative printer heads for golden embossing**

**Ravindra Ganpat Chopade**

With increasing work load, Ravindra started searching for alternatives to conventional punching type method for golden embossing on student thesis and project reports. Failing to find any such machine in the market, he decided to develop one of his own. His machine is a XY plotter with a modified soldering iron as the writing head. He has also modified two other printing machines for golden embossing. Located near IIT Mumbai, he decorates the work of techies and that's how NIF discovered him.



## Mizoram



### **Arecanut peeler**

L. Ralte and L. Sailo

The peeling of areca-nuts is very tedious and the high cost of labour makes this business sometimes unviable. The innovators have come up with a portable design of a peeler, which is safe, easy, cost effective, eliminates drudgery, and increases the production.



## Gujarat



### Mitticool range of earthen products

Mansukhbhai Prajapati

**Mitticool fridge:** It is a clay fridge for the common man, which does not require electricity and keeps food fresh too. Mansukhbhai came up with Mitticool fridge working on the principle of evaporation. Water from the upper chambers drips down the side, gets evaporated, leaving the chambers cool. This keeps food, vegetables and even milk fresh for days.

**Tawa/pan:** Non-stick tawas have become an essential part of our kitchens to prepare low oil food. But these non-stick pans made of metal are quite costly. Their non-stick coating also does not last long. Blending traditional and modern technology, Mansukhbhai has developed a clay tawa with a black non-stick food grade coating. Being non-metallic, the rotis, dosas and other items cooked on it give a different taste and feel much better.





## Maharashtra



### Ginger and turmeric planter

Indrajit Balvirsingh Khas

Conventionally, labors have to dig soil and sow ginger/turmeric, which is tedious, time consuming and back breaking. The innovator has developed a tractor mounted turmeric/ginger planter with adjustable row spacing. This planter can open a furrow; meter the seed, and deliver and place the seed appropriately in the furrow.



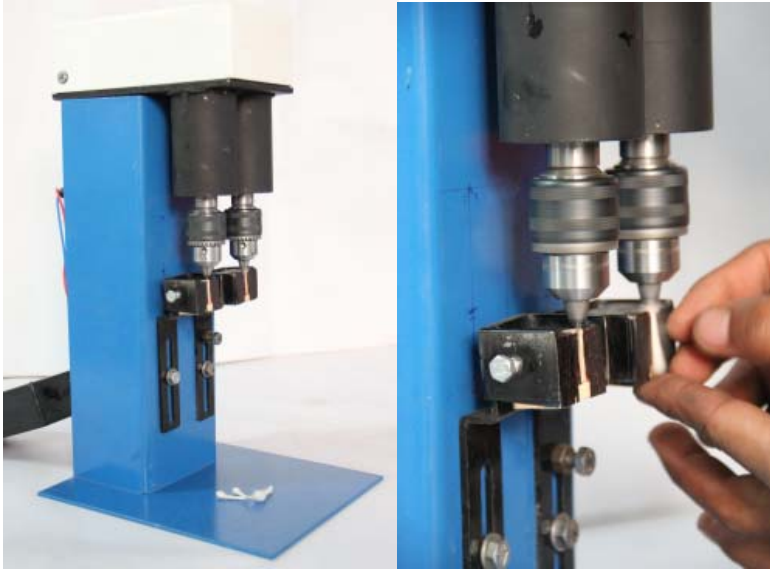
**Gujarat**



## **Cotton wick making machine**

Dipakbhai Vyas  
Vijaybhai Solanki

Cotton wicks for diyas are mostly made by women using their hands manually. The two innovators discussed and developed an automatic machine to do the same, which has resulted in less drudgery and more output and thus, more income.



## Uttar Pradesh



### Mobile sprinkler system for irrigation

Ram Sajeewan

Ramsajeewan has made this mobile sprinkler system, which is mounted on a circular rail. The sprinkler moves forward due to the pressure of water and sprinkles water, which keeps the soil moist.



## Bihar



### Walker with adjustable legs

Shalini Kumari

Shalini's grandfather uses a walker to assist him while he walks. But she noticed that he could only use the walker comfortably while walking on a level surface. Her grandfather enjoys walking on the terrace but he finds it difficult to walk up the stairs. Seeing her grandfathers' plight, Shalini came up with the idea of the modified walker with adjustable legs. She has also thought of including a folding seat so that the user can rest for a while when required and fitted a horn and a light to it as well. It has been fabricated with the help of local designers.



## Rajasthan



### Solar Laminator

Amandeep Singh

Amandeep developed a laminating machine that runs on solar energy when he was still in school. The solar powered laminator operates using the same principle as a solar cooker, replacing the electrical heating filament inside the laminator with a black box surrounded with mirrors. The solar energy collected in the box heats the metallic plates that affix the lamination sheets to the desired document. The machine can laminate an A4 size document in 15 minutes on a sunny day and can be powered by electricity in the absence of sunlight.



## Tamil Nadu



### Use of Helmet as an ignition to start two wheelers

SM Arthi, S Vinotha and Lailaa Banu

While there are laws preventing a two wheeler driver to ride without a helmet, yet the same is not followed properly. A lot of deaths in road accidents occur due to this. Arthi, Vinotha and Lailaa independently thought about this problem. They wondered if the helmet is so useful and is life saving, why it cannot be used for ignition to start two wheelers. It effectively means that until the rider has worn the helmet, the vehicle would not start. Jitendra Sahu (opposite page) also thought about the same and developed a working model.



Orissa



Use of Helmet as an ignition to start two wheelers

Jitendra Sahu

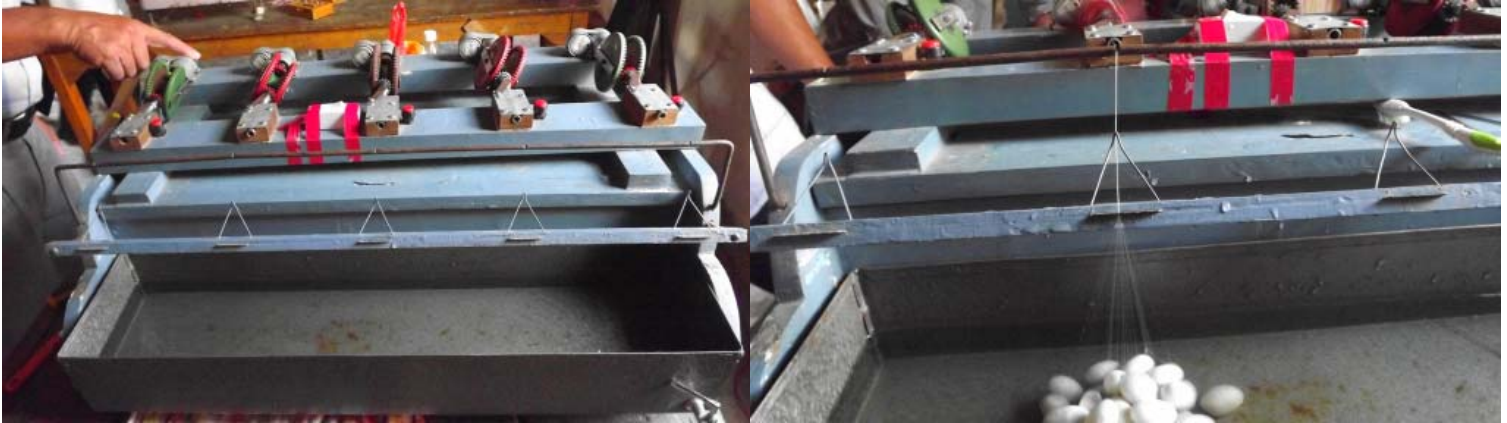


## Manipur



**Solar Silk Reeler**  
M Manihar Sharma

The solar muga silk reeling cum spinning machine is a portable and durable machine, which can perform and can function like any other large machine. As the name indicates, this machine spins thread while reeling from the cocoon simultaneously. Working on solar power, it saves time, labour and capital producing super fine thread.







## Preventing driving without a license/valid documents

Varsha Kumari, Bihar; Durgesh Kumar, Bihar; Jyoti Dhillon, Haryana; Ravi Ranjan, Bihar; Shiv Kumar, Bihar; G Krishna Kumar, Tamil Nadu

Alarmed with an ever increasing rate of accidents caused by teenage drivers and those without proper training, these children have independently conceived similar ideas to prevent this. The basic idea is to prevent a vehicle from being driven if the authorised license is not present, is invalid or has expired.



Punjab



## Modified Painting Brush

Ektapreet Kaur

Even though, Ektapreet has never been too fond of art and painting, she doesn't miss her fine arts class, which is twice a week. She observed how different paintbrushes were required for different kinds of strokes and paintings. "What a waste of money and how tiring to keep alternating from one brush to the other!" she thought.

This inspired her to think of a single paintbrush, which could accommodate varying sizes, just like a pen can have refills of many colours.



**Assam**



**Adaptable poster writer pen**

Rimjhim Baruah

Rimjhim, while pursuing art, found it difficult to write letters with a brush, a task taught at her school. She also found it difficult to write in a uniform size. So she came up a poster writing pen, using which one can easily write in different thick and thin strokes between a certain range (mm).



**Karnataka**



## **Bed sheet squeezer**

Dhavala

Who has not felt troubled while manually squeezing washed bed sheets or denims to drain out water? Seeing her mother bending to squeeze bed sheet after a thorough wash, Dhavala got worried about back pain that this posture might cause. She started thinking about an idea to alleviate the suffering of her mother and other older people. She then conceived an idea about a simple machine, which has one fixed arm and another one with a handle. The bed sheet or any such cloth is attached to the machine, and as the handle is rotated, the water gets squeezed out of the bed sheet.





## Oxygen/ carbon dioxide level indicators in car

S R Valava, Tamil Nadu

Pratyush Kumar Sahoo & Bikash Kumar Mallick, Orissa

All the students thought about this idea after reading/ hearing news about accidental deaths in cars due to suffocation. Their idea is to have a system in four wheelers to detect levels of oxygen/ carbon dioxide and open windows when oxygen level drops or carbon dioxide level rises, thereby preventing accidental deaths of children or pets locked inside the car.



## Rajasthan



### Improved variety of Fennel - Abu Saunf 440

Ishak Ali

As compared to the popular varieties, this improved variety has higher yield and better scent. It requires less water and is pest resistant as well. In this variety the number of umbel per plant is 30 to 40; number of seeds per umbel is 400; weight of 1000 seeds is 23 g; maturity period is 250 to 280 days and seed yield is 27 to 29 quintals/ha.



## Himachal Pradesh



**Apple variety suitable for lower altitude**

Hariman Sharma

Hariman has been able to develop an improved variety of apple that can easily grow in low altitude/plains where the temperature can be between 40 to 45°C during summers.



## Maharashtra



### Jai Shri Ram paddy variety

Late Sriram Govinda Lanjewar

The farmer developed an improved paddy variety through selection. The yield of this variety is higher (45 to 55 Qtls/ha) as compared to other locally popular varieties. The grains, which are short and thin have good cooking quality and taste. The variety is resistant to biotic and abiotic stresses as well.





## Kerala



### Wonder cardamom- High yielding variety of cardamom

Sabu Varghese

Sabu has developed a drought-resistant cardamom variety- "*Wonder cardamom*", which can also be grown in rubber plantations at lower altitude. He developed the variety using seeds collected from a morphologically different plant followed by vegetative multiplication. The specialty of this variety is that it has branched panicles. Other important features of this farmer-bred variety, which have caught the attention of the scientific community, are higher adaptability to planting at lower altitudes and lower rainfall regions, which are traditionally known as non-cardamom belts and its use as an intercrop in rubber plantations.



## Rajasthan



### **'Sitara Srangar'- An improved variety of mustard**

Haukam Singh Lodha

This variety, which has been developed through selection, possesses tolerance to pod shattering and water logging. The yield is 50-55q/ ha with the oil percentage being 40-44%. This variety is also resistant to alternaria disease and performs well under saline water conditions as well.



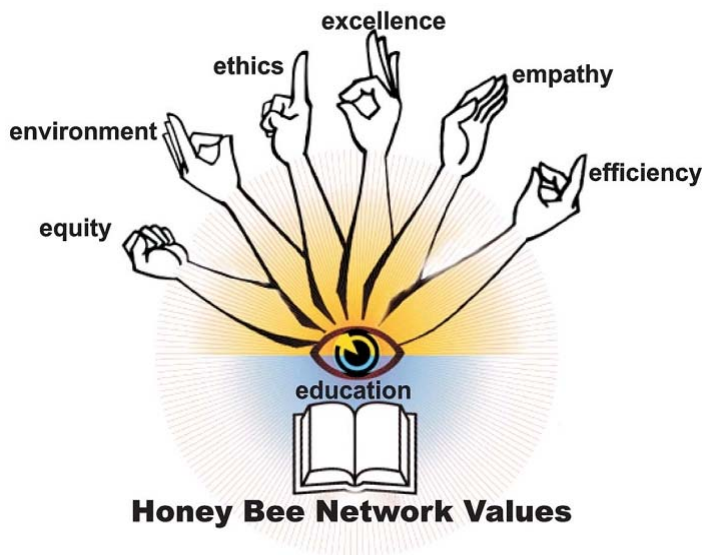
## Uttarakhand



### **Indrasan - An improved high yielding paddy variety**

Late Indrasan Singh

The 'Indrasan' paddy variety has higher yield than commonly grown paddy varieties. The efficiency of the crop as well as the recovery rate of the grains is also much higher than other varieties. The starch obtained is of superior quality in comparison to the conventional alternatives. The major distinguishing character of this variety is its red coloured roots.



**Honey Bee Network Values**



[www.honeybee.org](http://www.honeybee.org)

## Community knowledge based tea

An Initiative of National Innovation Foundation - India, Honey Bee Network and Ensigns Life Sciences - Yuvan Long Life Pvt Ltd.

Six types of healthy tea - Anti-Diabetic, Anti-Obesity, Anti-Ageing, Anti-Oxidant, Anti-Inflammatory, Anti-Hypertensive.



*A fair share of benefit will go back to the communities*

## Community knowledge based herbal products

These products, based on the community knowledge, have been developed by Sadbhav-SRISTI Sanshodhan laboratory.

**SRISTI Shastra** : It flourishes the growth of the plant by increasing flowering as well as fruiting. Besides overall vegetative growth, it is not harmful to nature and human beings. It also controls sucking pests like white fly, heliothis, aphid etc.

**SRISTI Krushak** : It is an excellent remedy for leaf curl disease. Besides controlling the disease it increases the vigor of the plants by increasing overall growth.

**SRISTI Suraksha** : It is a very efficient treatment for termite and acts as a vitaliser to the affected crops. To control termites the herbal formulation is mixed with sand and spread in the field. Sometimes it is dispersed in the field mixed with the flow of irrigation water. In some cases, it is also drenched in the affected part of the plant and sprayed on the vegetation to repel termites.

**SRISTI Prayas** : It is a highly effective formulation to act as a herbal growth promoter, and stops shedding of flowers as well as increases the overall growth of the plant. This formulation strengthens the plants internally and enables them to withstand extreme weather conditions. Constant use of this formulation increases the yield and reduces the toxic content in our daily diet.

**SRISTI Shakti** : A herbal growth promoter, which helps in production of excellent quality organic food grain. Regular use of this formulation not only increases the yield.

**SRISTI Prahar** : A herbal growth promoter, which is effective against mealy bug. Constant use of this formulation not only increases the yield but also reduces the toxic contamination in our food and environment.

**SRISTI Sarvatra** : It is a highly effective formulation to act as a herbal growth promoter, which is effective against nematodes and sucking pest. This formulation strengthens the plants internally and enables them to withstand extreme weather conditions. Constant use of this formulation increases the yield and reduces the toxic content in our daily diet.

**SRISTI Rakshak** : It is a very efficient treatment for pest in cotton. Sometimes it is released in the field along with the flow of irrigation water. In some cases, it is also drenched in the affected part of the plant and sprayed on the vegetation to repel pest.

## Animal Health Related Products



Based on the knowledge provided by traditional knowledge holders and communities, herbal formulations have been developed by NIF to treat veterinary diseases or address medical conditions. These include medications to overcome silent estrus, cure bloat, cure wound including maggot wound, prevent and cure retention of placenta, alleviate ephemeral fever, cure fever of unknown origin, promote general health and vitality of animal, cure ecto/endoparasite infestation, cure diarrhoea, enhance milk production, cure mastitis (bacterial), cure hematuria among others.

*A fair share of benefit goes back to the communities*

## Herbal Human Products



*A fair share of benefit goes back to the communities*



Based on the knowledge provided by traditional knowledge holders and communities, herbal formulations have been developed for various purposes which include pain relief cream, mosquito repellent cream, skin care creams, shampoos, oil, etc. In addition, nutraceutical products like multi grain cookies/ khakhras have also been developed.





## The National Biennial Competition for Green Grassroots Unaided Technological Innovations and Traditional Knowledge

Sound technological ideas, innovations, outstanding examples of traditional knowledge in human or veterinary health or agricultural practices, new plant varieties etc invited from farmers, artisans, mechanics, students, women and other people from the unorganised sector for NIF's National Biennial Competition.

Prizes range from Rs 10, 000 to Rs 7, 50, 000



### Address for sending the entries

National Coordinator (Scouting & Documentation),  
National Innovation Foundation - India, Satellite Complex, Premchand Nagar Road, Ahmedabad 380015 Gujarat  
Toll Free No 1800 233 5555 Tel: (079) - 2673 2456/2095, 2675 3501/3338 Fax: (079) - 2673 1903  
email: [campaign@nifindia.org](mailto:campaign@nifindia.org); [www.nif.org.in](http://www.nif.org.in)