



National Innovation Foundation

# *Madhya Pradesh Innovates*



Honey Bee Network

# MADHYA PRADESH INNOVATES



## **National Innovation Foundation**

Bungalow 1, Satellite Complex  
Premchand Nagar Road  
Vastrapur, Ahmedabad 380 015  
Gujarat, India  
Telephone: +91-79-2673 2456/2095  
[www.nifindia.org](http://www.nifindia.org)  
Email: [info@nifindia.org](mailto:info@nifindia.org)



**HONEY BEE NETWORK**  
[www.honeybee.org](http://www.honeybee.org) [www.sristi.org](http://www.sristi.org)

# CONTENTS

## MADHYA PRADESH INNOVATES

PART I  
INNOVATIONS FROM MADHYA PRADESH | 11

PART II  
HERBAL PRACTICES & PRODUCTS | 29

PART III  
INNOVATIONS FOR MADHYA PRADESH | 49

# PREFACE

National Innovation Foundation (NIF) has been pursuing the mission of making India innovative and a creative society since 2000 with the active support of Department of Science and Technology, Government of India. Till date NIF has been able to scout innovations and traditional knowledge practices from over 545 districts across India.

Thanks to the support of volunteers from Honey Bee Network, we have been able to discover many unsung heroes and heroines of our society who have solved local problems without any outside help.

Despite various constraints, NIF has put together a small book celebrating creativity, innovation and traditional knowledge from Madhya Pradesh. I am conscious of its limitation in terms of coverage and outreach. But if we could uncover at least a few examples of the ability of local communities and individuals to solve problems on their own without outside

help, how much more can be done if state and private sector agencies join hands with NIF actively.

I invite the state government and its various organs to actively support our quest to uncover many more creative communities and individuals in rural and urban areas. NIF will then help in building value chain around them.

The book is divided in three parts. The mechanical innovations developed by innovators from Madhya Pradesh are covered in part one. Selected examples of herbal traditional knowledge are given in part two. The innovations from other parts of the country suitable for the development of Madhya Pradesh are given in part three.

By no stretch of imagination, could we claim that we have achieved a great deal. We have merely made a simple point. There are a large number of knowledge rich people who

# MADHYA PRADESH INNOVATES

may not have been educated much, may in fact be economically poor also, but still have the ability to solve a few problems so well.

The challenge really is to work out a synergy so that no creative voice remains unheard, and no solution remains localized and unrecognized. By adapting public policy in support of grassroots innovators and traditional knowledge holders, we can make economic development process more inclusive and sustainable.

This book on innovations has been compiled at the request of Dr. Vijay Kelkar, Chairman, Finance Commission and the Member, Governing Council of the National Innovation Foundation as a tribute to the creativity and innovation at grassroots. This presentation is part of a series of innovation compendium prepared for every State of India. We hope this will be followed up in the form of concrete policy and

institutional initiatives in each State to empower creative people to improve the quality of life of common people and thus promote inclusive growth.

It is my belief that such examples will act as spur for other State government departments to look for creative efforts of their staff and users at ground level. I hope that NIF will have the opportunity to work closely with the State government in future and expand knowledge base, add value to selected technologies and help them diffuse through commercial and non-commercial social channels for improving the livelihood of the majority of the people.



R. A. Mashelkar, FRS  
Chairperson, Governing Council  
National Innovation Foundation, Ahmedabad  
mashelkar@nifindia.org

## Building a Bridge with Grassroots Innovators in Informal Sector

To make the Indian development process more inclusive, there is no escape from building upon creative and innovative experiments pursued by common people at village or semi-urban level. Many of these experiments lead to development of innovations, which can improve productivity and generate employment. However, the purpose of a particular innovator may often be to solve just his/her problem. There is no mechanism available for him to share the knowledge, innovation or practice with other people in different regions. Sometimes, ideas and innovations get diffused through word of mouth. But many times, these ideas remain localized. In the process, potential growth and social development gets constrained. To overcome this constraint, Honey Bee Network with a handful of volunteers triggered a movement, twenty years ago to scout, spawn and sustain the unaided innovations and outstanding traditional knowledge from the informal sector of our country.

Drawing upon this experience, National Innovation Foundation (NIF) was set up in 2000 with the help of Department of Science

and Technology, Government of India to scale up the idea of learning from grassroots innovators.

Under the inspiring leadership of Dr. R. A. Mashelkar, Chairperson NIF and former Director General, Council of Scientific and Industrial Research (CSIR), NIF has taken major initiatives to serve the knowledge-rich, economically poor people of the country. It is committed to make 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. It aims at promoting lateral learning among local communities to generate low cost affordable solutions of the persistent and emerging problems, and enhance the diffusion of innovations on a commercial as well as non-commercial basis.

### How does NIF work?

Primarily, NIF has five functions: (a) Scouting and documentation, (b) Value addition and research and

---

<sup>1</sup> The Honeybee collects pollen from the flowers but they are not impoverished, 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. The network acknowledges the innovators, traditional knowledge producers and communicators so that they do not remain anonymous.

## MADHYA PRADESH INNOVATES

development, (c) Business development and Micro Venture, (d) Intellectual Property Rights protection and (e) Dissemination, database development and IT applications.

NIF has been entrusted with the responsibility of building a National Register of Grassroots Innovations and Traditional Knowledge. It is not enough to document or disseminate the innovations or outstanding traditional knowledge. Value addition is very important for harnessing the full potential of the idea. NIF has entered into MOU with CSIR and Indian Council of Medical Research (ICMR) besides other organizations. CSIR has allocated funds to support research on grassroots innovations in CSIR labs. Similarly, ICMR supports research on such herbal healing knowledge, which has not been documented in the classical texts and formal institutional literature. NIF also helps in generating a very large pool of open source / public domain technologies. A small number of innovations are also protected by patents and other IPRs.

---

The Honey Bee Network strongly believes in sharing knowledge among the providers of innovations in their own language, which is achieved by publishing local language versions of Honey Bee newsletter. It also ensures that a fair

For most innovators, attracting risk capital for converting innovations into enterprise is very difficult. They neither can offer much collateral nor are they able to develop a business plan or deal with formal R&D system.

A Micro Venture Innovation Fund (MVIF) has been set up with the help of SIDBI to provide risk capital for technologies at different stages of incubation. Under single signature, innovators are trusted and investments are made to help them commercialise their innovations. Most innovators do not make good entrepreneurs. For entrepreneurship, one has to make consistent batch by batch production of products. Innovators are often incorrigible improvisers. They seldom make two things alike. NIF has helped such innovators to license their technologies to third party entrepreneurs. Most of the licenses have been given to small entrepreneurs and in a few cases, to medium enterprises.

A very elaborate benefit sharing system has been developed, governed by the Prior Informed Consent (PIC) of the knowledge

share of benefits arising from commercial exploitation of local knowledge and innovations reaches the innovators and knowledge providers.

providers. Attempt is made to share benefits not only with the innovators but also with their communities and for nature conservation. In addition, a small part is kept for contingency support to needy innovators, for R&D stakeholders, promoting women's innovations and meeting overhead costs.

It is remarkable that grassroots innovations are generating global demand, as evident from inquiries from around fifty-five countries for various technologies, NIF has succeeded in commercializing products across countries in six continents apart from being successful in materialising thirty cases of technology licensing with the help of partner agencies.

### **What has it done?**

With major contribution from the Honey Bee Network, NIF has been able to build up a database of more than 1,00,000 ideas, innovations and traditional knowledge practices (not all unique, not all distinctive) from over 545 districts of the country.

NIF has filed 202 patents in India and seven in US and one PCT application. Out of these, 35 patents have been granted to grassroots innovations in India and four in US. NIF has funded

113 projects under MVIF to the extent of Rs.1.3 crores. Hundreds of technologies have diffused through farmer to farmer social network.

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 more affordable sustainable solutions by using local resources frugally.

Those who see poor only as the consumer of cheap goods, miss the knowledge richness at the grassroots level. The Poor can be the Providers also.

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.

### **How can state government join hands with NIF?**

- a. NIF has no field extension unit nor does it want to have one. However, state government has several field functionaries in the area of agriculture, education, industry, rural development, women and child care, forestry, etc. There can be a very fruitful partnership between NIF as a



# MADHYA PRADESH INNOVATES

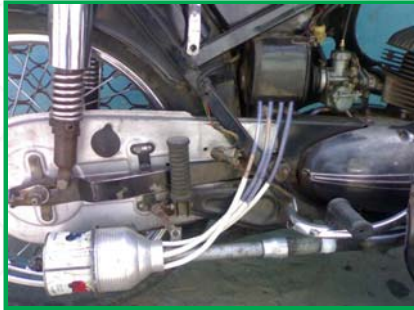
- source of innovative ideas and technologies and state government as partner in dissemination, value addition and even commercialization through incentives, promotion, subsidies, etc.
- b. State government can join the national campaign for scouting innovations and traditional knowledge and motivate its grassroots functionaries to join hands with NIF in uncovering the talent at the community level.
  - c. Students in schools and colleges can be motivated to scout creative and innovative people in their neighbourhoods and send the entries to NIF (Post Box No.15051, Ambavadi, Ahmedabad 380 015, [campaign@nifindia.org](mailto:campaign@nifindia.org)). Examples of innovations can also be included in the curriculum for the school and college education.
  - d. Demonstrations and trials can be organized at various regional research stations and KVKs (Krishi Vigyan Kendras) so as to create awareness about the creative potential of common people.
  - e. The research institutions can be mandated to add value to the knowledge of innovative people and help in protecting their knowledge rights.

- f. On the state's website, link to NIF can be given and the innovations from the region can be displayed to put forward the creative face of the state before the people.
- g. Some of the innovative people identified by NIF and/or state government could be awarded at district and state level besides giving them support for further work.
- h. A nodal officer could be appointed to keep in dynamic touch with NIF to ensure that all the areas of possible cooperation are explored.

I hope that NIF would be able to develop a functional, fruitful and fulfilling relationship with the State of Madhya Pradesh. Tremendously rich knowledge of biodiversity and environment besides numerous grassroots innovations can be leveraged through the proposed collaboration.



Anil K Gupta  
Executive Vice Chairperson, NIF, Ahmedabad  
Professor, Indian Institute of Management,  
Ahmedabad  
[anilg@nifindia.org](mailto:anilg@nifindia.org)



**“Innovation opens up new vistas of knowledge and new dimensions to our imagination to make everyday life more meaningful and richer in depth and content”.**

**- Dr APJ Abdul Kalam**



**“The purpose of innovation is to create a new value for an individual, team, organization or for society at large”.**

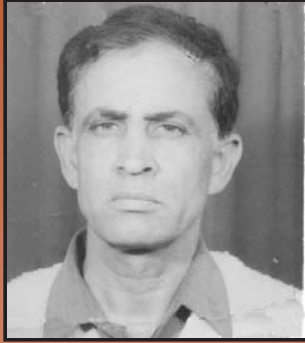
**- Dr RA Mashelkar**

# PART I

## INNOVATIONS from MADHYA PRADESH

This section contains grassroots innovations originating from the rural/urban areas of Madhya Pradesh





**Lalit Surana**  
Narsinghpur

## Battery-operated sprayer

Lalit Surana, a mathematics graduate from Narsinghpur district in Madhya Pradesh, just needed to carefully notice the simple water sprayer used by hairdressers to develop a blueprint for a farm sprayer.

His battery-driven sprayer can be used for spraying liquids or suspensions on small plants as well as tall trees in gardens. It can be used to maintain moisture content in greenhouses. The device requires extremely simple parts that are easily available in the market. The invention comprises a plastic container, a six-volt rechargeable battery and a six or 12-volt motor, depending upon the task it is required to perform. The battery lasts for about six hours. The cost of the six-volt sprayer is around Rs 250 and the 12-volt sprayer costs around Rs 500.



Surana has also developed a duster, which can dust one to five kg of dust with the help of a six to 12-volt battery. Just like the sprayer, it can dust one hectare of land in two and a half hours. He was given a Consolation award in NIF's Second National Competition for Grassroots Innovations and Traditional Knowledge in 2002.

## Seed broadcaster

The 18-year-old science student Dharmendra Patidar from Janakpur-Mokhan village of Neemuch district of Madhya Pradesh has developed a battery-operated seed-broadcasting machine. Patidar belongs to an agricultural family; so his immediate provocation to develop the machine came when he realised that the manual scattering of seeds was always uneven resulting in improper utilization of agricultural space. He also observed his father facing difficulty in the uniform broadcasting of fertilizers. The simplicity and efficacy of this device has attracted farmers of the nearby villages, who have flooded him with demands for manufacturing it for them.

Patidar's device comprises a tin cylinder, which is cut from the centre and a rotor with metal blades inside it. The rotor is attached to a motor, which is driven by a six-volt rechargeable battery of a torch. The broadcasting machine also contains a fan and a scattering machine inside the drum. The fan is attached to a speed regulator, which regulates the quantity of seeds coming out of the machine. This machine can also be operated on the motor of a tape recorder.

The broadcasting machine weighs around 800 grams and costs around Rs 300. Patidar's teacher G L Dhangar, friends and members of the family encouraged him throughout in his effort to become an innovator.

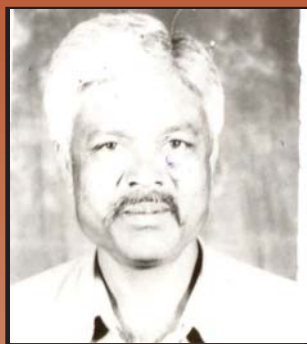
He was given an award under student's category in NIF's Second National Competition for Grassroots Innovations and Traditional Knowledge in 2002.

02



**Dharmendra Patidar**  
Neemuch





**Ram Kumar Patel**  
Narsinghpur

## Motorised weeding machine

Being a soya bean cultivator himself, Ram Kumar Patel, who owns nine acres of land in the Karkvel village of the Narsinghpur district of Madhya Pradesh, has always been sensitive to the problems of the fellow cultivators. One of the most irritating problems for the farmers in a soya bean field is that of the presence of weeds. Getting rid of the excessive growth of weeds in the fields requires a lot of monetary input and hard labour. This problem has been aggravated by the shortage of farm labourers in the area.

In 2000, he developed a motorised weeding machine, which uses 2 to 2.5-horsepower engine of the Rajdoot motorbike. It consists of used iron angles, gears, chain sprocket, a clutch box and tines. The clutch lever is positioned between the handle bars. One can change the gap between two tines while weeding; so the area covered in one movement of the machine can be altered to correspond to the different levels of weed concentration. Another useful feature of the weeding machine is that a small sprayer can be operated through it. The machine removes weeds from one hectare of land in around five hours. It costs Rs 3,000 without the Rajdoot engine and Rs 20,000 with it. Earlier, he used to spend Rs 500 for removing weeds in an acre of land towards the cost of hiring labourers. Now, he just has to bear the cost of petrol for the engine, which comes around Rs 70. Thus, one can save about Rs 400 per acre.

The agricultural department of Madhya Pradesh government gave Patel a certificate of appreciation for developing this machine. He was given a Consolation award in NIF's Second National Competition for Grassroots Innovations and Traditional Knowledge in 2002.



## Curing deformities

Kailash Chandra Pandey of Mandsaur village in Mandsaur district in Madhya Pradesh has been the beneficiary of an age-old practice that corrects bone deformities. Pandey was born with deformed feet. His mother, Shantidevi Dhanryayji Pandey, relied on a remedy that she herself had learnt from an elderly villager Nahar Singh.

This remedy is reported to work best for small children in the age group of two to ten years. First, the affected part has to be massaged lightly with ghee, made of sheep's milk. This has to be done for a week. Subsequently, seeds of *gwarfali (Cyamopsis tetragonoloba)* are ground into a fine powder. This is mixed with water and a paste is made (much like *rabdi*). The paste is applied on the affected part, covered and bandaged with leaves (preferably banana or any other big leaf). The paste has to be applied every day for seven days. The skin in the affected part starts melting. Boils may also erupt. However, there is no need to worry. Coconut oil can be applied on the affected portion.

The limb should be bandaged with the help of wooden pieces that are placed in a manner that facilitates the straightening of the bone in the desired direction. This bandage should be kept for 15 to 20 days. Subsequently, it can be removed.

Forty-eight-year-old Pandey mentions that this process is quite painful. In fact, his grandfather had been unable to see him in so much pain and had stopped the treatment. As a result, his deformed legs could not be set right completely.

Interestingly, Pandey says that this practice was put to great use by thieves earlier. They would steal cattle and use this practice to change the shape of the horns which were generally the identification mark. (Honey Bee, 15(4):17-19, 2004)

**Kailash Chandra Pandey**  
Mandsaur



**Raj Kumar Rathore**  
Sehore

## Richa 2000- perennial pigeon pea variety

Progressive farmer Raj Kumar Rathore (40) owns 18 acres of land on which he grows wheat, soybean, mango, strawberry and litchi. One acre is reserved for breeding new pigeon pea varieties. His family has always supported his plant breeding efforts, even when the government discouraged him.

Rathore has developed a high yielding perennial pigeon pea variety with a bushy growth habit. He first began his foray into commercial plant breeding in 1997 when he noticed an odd plant in his field of ICPL-87. The plant remained green for a longer duration and had bigger flowers and longer leaves. He propagated the plant in isolation but found that yields were low until he began topping the plant twice a year to encourage further branching. Rathore has struggled in the marketing of his variety but remains hopeful that a solution will be found.



Apart from the plant variety he has also made a motor-cycle driven agricultural implement and has developed a technique to preserve strawberries while in transportation. He was given a Consolation award in NIF's Fourth National Competition for Grassroots Innovations and Traditional Knowledge in 2007.



## Smallest portable balance: 8.2 gm

Rajkumar Soni operates a small watch shop with his father and supplements his income with a jewellery making business, but his true passion is inventing.

Rajkumar was unable to afford the microbalance needed for production of gold jewellery, so he set about making his own microbalance. He spent six months and Rs. 10,000 developing it. The microbalance (made of silver) weighs only 8.2 grams, and weighs objects in the range of 20-2000 mg.

He has also made an agricultural implement to scatter seeds or fertilizer in pellet form, developed an idea of a manual washing machine, and a chemical formulation for goldsmith work. He was given an award in the student's category in NIF's Fourth National Competition for Grassroots Innovations and Traditional Knowledge in 2007 (*Honey Bee*, 17(1) & (2): 37-38, 2006).



06



**Rajkumar Soni**  
Narsinghpur



**Shamrao Parhate**  
Chhindwara

## Shivraj multipurpose agricultural equipment

Mechanic Shamrao Parhate is a multidimensional serial innovator par excellence, and over the years, he has developed numerous useful innovations. His notable inventions include technique to stop wobbling of wheels in four wheelers, modified drip irrigation system, energy generation through transportation, and welding spark protector technology.

Parhate, who lives in the soyabean and cotton belt of Madhya Pradesh, observed that sowing, plowing, weeding and harvesting were labour intensive agricultural operations. Scarcity of labour and the high costs of mechanization were problems faced by the farmers. Parhate developed a non-mechanized multifunctional tool. 'Shivraj' is a multipurpose tool frame drawn by a pair of bullocks to which various implements can be attached for different operations like shallow ploughing, interculturing, weeding, sowing, residue collection, groundnut digging and soyabean harvesting. With some modifications it can be used for spraying operation also.

He was given a Life time achievement award in NIF's Fourth National Competition for Grassroots Innovations and Traditional Knowledge in 2007.



## Modified silencer

Bhagwan Singh has modified the silencer of the two-wheeler. Part of the exhaust gas is used to pre-heat the intake air leading to increased combustion efficiency of the engine, which ultimately leads to increase in mileage in the range of 25 to 30 per cent and reduction in the noise of the vehicle. NIF facilitated the testing of his silencer at BITS, Mesra, Ranchi, which corroborated the claims of the innovator. NIF also filed a patent in the name of the innovator for this technology.

He has developed many other items like battery operated bicycle, a multi-purpose harvester, multi-purpose jogging machine, amongst others.



**Bhagwan Singh Vishwakarma**  
Bhopal





**Roshanlal Vishwakarma**  
Morena

## Sugarcane bud chipper and others

Challenged by an engineer to make a machine that can remove buds from the sugarcane for the plantation purpose so as to minimize losses as well as time, money and seeds, Roshanlal came up with this implement. 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. As per CIAE, the technique has been found to be novel though they have suggested some ergonomic feasibility study. A patent has been filed in the name of the innovator by NIF. He has also been supported under the Micro Venture Innovation Fund of NIF for test marketing and commercialization of his innovation.

Roshanlal is a serial innovator and has innovated/improvised various devices and implements like sugarcane set cutter, sugarcane harvesting tool, traveling iron, automatic spray pump, timer for three-phase motor etc.



## Reaper windrower

Many times, in a standing crop, soybean pods shatter due to non-availability of labors for harvesting the crop in time, leading to reduced yield and loss. To solve this problem Bhagwan Singh decided to develop a reaper windrower machine.

This device has three different units namely, cutting unit, which consists of cutter bar, reel unit for pushing the standing crop towards the cutter bar and gathering unit to windrow the crop at centre of the machine thus making it easy to handle/transport to the threshing floor. It reduces manpower requirement and the drudgery involved in the harvesting process.

NIF has filed a patent in the name of the innovator.



**Bhagwan Singh Dangi**  
Vidisha





**Radhey Shyam Sharma**  
Ujjain

## Bullock operated sprayer

The bullock operated sprayer is pulled by a pair of bullocks and gets the drive from the ground through a gear box and belt pulley system. From the gear box it is then taken to the pump through sprocket and chain drive. When the operator shifts the lever to a higher gear, the frequency of strokes of the pump increases as a result of which more pressure develops in the container. The spray fluid, thus, atomizes into fine droplets with a wider swath. He has been supported under the Micro Venture Innovation Fund of NIF for test marketing of his innovation. Patent in the name of the innovator has also been filed by NIF.



## Pooran pump

Looking at the shortage of diesel/kerosene in the villages and crisis of electricity, Pooranlal developed the bullock driven water lifting pump so that the farmers can use their existing resources and get sufficient water for irrigation and domestic work.

The major function of “Pooran Bullock Driven water lift pump” is to convert the bullock energy into mechanical energy. The main component of equipment is the reduction gear unit, which transmits the power to the system. The main conversion unit, which consists of an old chaff cutter gearbox and the gear reduction unit are installed on suitable foundation. The pump provides output equivalent to 3HP electrically operated centrifugal pump. He was given the State award in NIF’s First National Competition for Grassroots Innovations and Traditional Knowledge in 2001.



**Pooranlal Kushwaha**  
Tikamgarh

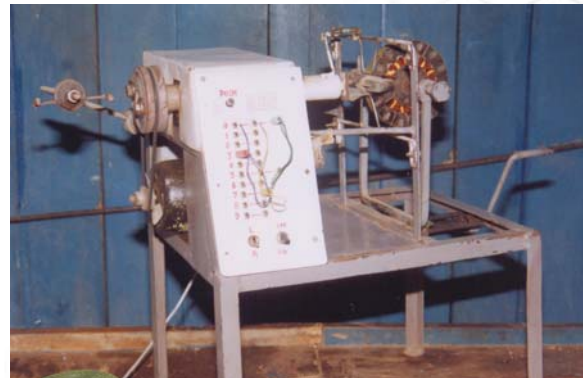


**Kailash Srivastava**  
Narsinghpur

## Automatic motor winding machine

Burning-out of the coil of electric fans is very common in rural as well as semi-urban areas due to erratic power supply and fluctuating voltage. These problems occur frequently in locally made fans which are widely used in rural areas. Coil making is an arduous and time taking process. If done manually it takes 8-12 hours per motor and needs a lot of concentration in counting the number of coils, which run into hundreds. Finger tips get bruised by continuous coiling.

The automatic motor coil winding machine of Kailash Srivastava addresses all these problems. It is cheaper than other available options, involves less maintenance cost and has more functions and can bind coils of many types in a short while, at the same time ensuring high quality output. As this device reduces drudgery and imprecision of manual coil winding operation which is slow, tedious and error prone, this could be a source of income for unemployed people who could start a small business equipped with this machine. There is a wide scope of diffusion of this device in the coil and motor winding industry, which is a cottage industry in rural and urban areas.



He has been supported under the Micro Venture Innovation Fund of NIF for test marketing of his innovation. He was also given a Consolation award in NIF's Third National Competition for Grassroots Innovations and Traditional Knowledge in 2005.



## Bahuhetuk Krishi Yantra- the seed cum fertilizer drill machine

Being physically challenged Ramesh Gujjar kept on thinking about ways that could help him perform various agricultural operations. He developed a multi-utility bullock driven flexible agricultural equipment, which is lightweight, versatile and easy to use. This innovation saves labor and time as well as dependence of the physically challenged on others and offers an alternative to many who cannot afford farm-labor or tractors.

The innovation can be used as a seed-drill-cum fertilizer dispersant as well as for ploughing, inter-cropping, weeding and leveling the land. This multipurpose device comprises a plough, seeding pipe, hopper, wheels, gears, hydraulic lifter and metallic chassis. The provision of lifter, seating arrangement, pressing lever (locking mechanism) to create sustained pressure for the engagement of the ploughing device with the soil are all special features incorporated for a physically challenged person, who cannot walk along /stand on the plough to create pressure. He was given a Consolation award in NIF's Third National Competition for Grassroots Innovations and Traditional Knowledge in 2005.



**Ramesh Chandra Gurjar**  
Harda

## Device to prevent water theft and others

Wajid is working as a sports teacher. He has developed a device to prevent the illegal pumping of water in public water supply system. The device stops the supply to the household using such a water pump. Wajid has also come up with an idea of collecting maximum rain water for efficient recharging of wells without blockage. Here the water gets cleaned using cloth filter before it reaches the well. He has also designed a foldable card, which can carry information about any events.

**Wajid Khan\***  
Mandsaur

\*A professional as per the rules of NIF. NIF does not consider such professionals for award or support but only provides linkages and visibility.



## Electronic gadgets

M K Narang owns an electronics shop. He has developed/improvised many solutions for day to day problems at a reasonable cost. One of the interesting among them is a mobile phone based security system where if someone tries to break open the door/shutter, the system dials the preset number, which alerts the owner. He has also developed an auto dipper unit for vehicles working on LDR sensors, a dark sensor based automatic lightening system, a timer based cooler pump protector, which switches on/off the cooler pump after preset durations, and an automatic water pump operator, which takes the feedback of overhead tank along with the reservoir.

**M K Narang**  
Jabalpur



## NATIONAL INNOVATION FOUNDATION, INDIA

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

#### Co-sponsors



Honey Bee Network



CSIR



SRISTI



IIM-A

#### The competition

The NIF, set up by Department of Science and Technology, GOI, seeks entries of unaided technological innovations and traditional knowledge developed by an individual or group comprising farmers, artisans, fishermen and women, slum dwellers, workshop mechanics, students, local communities etc., in managing natural and/or other resources. The innovations can be in machines, gadgets, implements, or processes for farm operations, household utility, transportation, energy conservation or generation, reduction in drudgery, creative use of biodiversity, development of plant varieties, generation of herbal remedies for human or animal health or developing new or any other low cost sustainable green technology related to various aspects of survival in urban and rural areas. Creative ideas for innovative technologies which have not yet been reduced to practice are also welcome. Communities developing People's Biodiversity Register (PBR) or People's Knowledge Register (PKR) are encouraged to register/link their knowledge base with the National Register at the NIF.

#### The awards

The best three innovations and traditional knowledge practices will be awarded Rs 1,00,000, Rs 50,000 and Rs 25,000 each in different categories. In addition, individuals and/or organizations that make extraordinary contributions in scouting grassroots innovations and traditional knowledge may also get awards worth Rs 50,000, 25,000 and 15,000 respectively besides recognition to many others. There will be several consolation prizes of Rs 10,000 each in different categories depending upon the number of entries and incremental inventiveness and potential social and environmental impact. Three most outstanding innovative ideas may be given prizes of Rs 50,000, 25,000 and 15,000 in addition to consolation prizes of Rs 5,000 each. There are special prizes for innovations by or dealing with, physically challenged people. The innovations /ideas of professionally trained

persons are not considered for award or financial support. There are special awards for journalists writing about grassroots innovations and/or traditional knowledge and creating greater awareness about NIF's missions. *The award money may be revised in due course.*

#### Students

Young inventors and innovators are invited to send their ideas or innovations for a special category of awards for them. These should be unsupervised, an outcome of their own creativity, without any support from their teachers or outsiders. There will be prizes worth Rs 15,000, 10,000 and Rs 7,500 for the best three entries and several consolation prizes of Rs 5,000 each in this category.

#### How to participate

Individuals or groups may send as many entries as they wish on plain paper providing a) genesis of the innovation and traditional knowledge b) its background and c) educational qualification and occupation, accompanied by photographs and/or videos if possible and any other information that may help in replicating the innovations/traditional knowledge. Herbal entries may be accompanied by dried plant samples to enable proper identification procedure. **The Seventh National Competition started on February 1, 2009 and entries will be accepted till December 31, 2010.** Every entry should include the **full postal address** to facilitate further communications.

#### Where to send entries?

National Coordinator (Scouting & Documentation), National Innovation Foundation, Bungalow No. 1 Satellite Complex, Premchand Nagar Road, Ahmedabad 380015 Gujarat  
Toll Free No 1800 233 5555 Fax: (079) - 2673 1903  
email: [campaign@nifindia.org](mailto:campaign@nifindia.org); [www.nifindia.org](http://www.nifindia.org)

## PART II

# HERBAL PRACTICES & PRODUCTS

This section contains details of herbal preparations used traditionally for various ailments and products based on such traditional knowledge



## Uses of *Achyranthes aspera* L. (Chirchida)

### NIF Database

#### Uses from Madhya Pradesh

##### Toothache

Apply the leaf juice on the gum and the aching teeth  
- Sanjay Singh Uplana, Nagda, Madhya Pradesh

##### Poisonous bite

Take the root juice orally  
- Sanjay Singh Uplana, Nagda, Madhya Pradesh

##### Scorpion bite

Take the root juice orally as well as apply topically on place of bite  
- Bhimsingh Thakur, Sivni, Madhya Pradesh

#### Uses from other states

##### Toothache

Rub fresh leaves on the teeth  
- Apsari Sahoo, Dhenkanal, Orissa

Brush the teeth with freshly plucked roots  
- Bhagvat Prasad Yadav, Nawada, Bihar

##### Scabies

Apply root powder along with a pinch of salt on the affected part  
- Jagdish Dash, Bargarh, Orissa

##### Fever

Grind roots (5g) with half black pepper into a fine powder. Take the powder orally  
- Rajkishor Prasad, Sheohar, Bihar

##### Hemorrhoids

Take a spoonful of dried root powder on an empty stomach till the ailment cures  
- Vishwanath Mahato, East Champaran, Bihar

##### Intestinal worms

Extract juice from the inflorescence, boil it with milk till it becomes thick. Take it orally with a little amount of asafetida  
- Sarasamma Rajappan, Idukki, Kerala

### Uses in Classical Codified Literature

Dried aerial parts are taken orally in the case of diabetes<sup>1</sup>; powder made from the dried plant is given orally to treat whooping cough<sup>2</sup>; decoction of the plant is used as laxative<sup>3</sup> and is also applied externally on boils and pimples<sup>3</sup>.

Product 'Cystone'<sup>4</sup> is made from this plant, which inhibits calculogenesis by reducing stone-forming substances like oxalic acid, calcium hydroxyproline and prevents urinary tract infections. Thirty five patents have been found on the medicinal applications of *Achyranthes* mainly for curing laryngopharyngitis<sup>5</sup>, and bronchial asthma<sup>6</sup>.



Source: <http://www.impgc.com/images/plantPictures/Achyranthes%20aspera.jpg>

## Uses of *Adhatoda vasica* (L.) Nees (Aldusa)

### NIF Database

#### Uses from Madhya Pradesh

##### Tuberculosis

Take the leaf juice orally along with little honey  
- Sanjay Singh Uplana, Nagda, Madhya Pradesh

##### Jaundice

Take the leaf and flower juice along with honey  
- Sanjay Singh Uplana, Nagda, Madhya Pradesh

#### Uses from other states

##### Asthma

Take the leaf juice orally  
- Jyothi Bhatta, Chikmagalur, Karnataka

Inhale the smoke of dried leaves

- Susanta Kumar Manjhi, Birbhum, West Bengal

##### Tuberculosis

Take the leaf juice orally with a little honey  
- Mahesh Bijarania, Nagor, Rajasthan

##### Cough

Take the leaf juice orally with a little sugar  
- Jyothi Bhatta, Chikmagalur, Karnataka

##### Malaria

Take the leaf decoction orally with jaggery  
- Mahesh Kumar Khangar Purohit, Sirohi, Rajasthan

##### Constipation

Take the leaf decoction orally with honey  
- Pradip Kumar, Bulandshahar, Uttar Pradesh

#### Uses in Classical Codified Literature

Decoction of the plant is taken orally to cure asthma<sup>7</sup>; leaves (500g) are decocted in 5 litres of water until a dark brown mass is obtained and two spoonful are taken with honey thrice a day for 2-4 days to cure fever<sup>8</sup>; rheumatic patients should warm the leaves and apply on the body<sup>9</sup>. Product 'Menstri Care'<sup>10</sup> prepared from the plant is an effective medicine for women's health problems. 'Diakof'<sup>4</sup> a herbal medicine uses *Adhatoda* along with other plants for treating cough. Ten patents have been found on its medicinal applications mainly for cough<sup>11</sup> and asthma<sup>12</sup>.



Source: NIF database

## Uses of *Argemone mexicana* L. (Utati)

### NIF Database

#### Uses from Madhya Pradesh

##### Itching

Take the root juice orally along with sugar once a day  
- *Manoj Thakur, Indore, Madhya Pradesh*

##### Boils

Apply the root and stem juice topically  
- *Bhimsingh Thakur, Sivni, Madhya Pradesh*

##### Blood purifier

Take the root juice regularly  
- *Bhimsingh Thakur, Sivni, Madhya Pradesh*

#### Uses from other states

##### Abscess/blisters

Juice extracted from the plant is applied on the affected part  
- *Chandra Kanvar, Sikar, Rajasthan*

##### Intestinal worms

½ inch root is taken along with water thrice a day to remove hookworms  
- *Amar Singh, Kangra, Himachal Pradesh*

##### Urinary disorder

Latex (10ml) is taken orally along with milk  
- *Rani B. Bhagat, Pune, Maharashtra*

##### Itching

Juice extracted from the plant is applied on the affected part  
- *Rameshwari Devi, Sikar, Rajasthan*

### Uses in Classical Codified Literature

Seed powder is taken with water to reduce toothache<sup>13</sup>; decoction of the plant is given orally<sup>14</sup>; seed oil is useful in case of colic pain<sup>13</sup>; and rheumatics should take seed powder to get relief<sup>13</sup>.

'Step syrup'<sup>15</sup>, prepared from the plant, is used to cure skin diseases and soft tissue infections. Ten patents have been found regarding its various medicinal uses such as in treating psoriasis<sup>16</sup> and for headache<sup>17</sup>.



## Uses of *Butea monosperma* (Lamk.) Taub. (Palash)

### NIF Database

#### Use from Madhya Pradesh

##### Pyorrhoea

Brush with twig for relief

- *Bhim Singh, Sivni, Madhya Pradesh*

#### Uses from other states

##### Acidity

Tie poultice made from cooked lukewarm flowers over the abdomen

- *Madhav Rao Shankar Rao Patil, Jalgaon, Maharashtra*

##### Cuts & wounds

Apply the bark juice topically

- *Dinesh Bediya, Ranchi, Jharkhand*

##### Toothache

Apply the resin powder on the affected gums

- *Bhomabhai Damor, Banaskantha, Gujarat*

##### Joint pain

Take the resin powder with milk

- *Devaram, Sirohi, Rajasthan*

##### Head lice

Apply the leaf juice on the scalp

- *P. D. Walikar, Bagalkot, Karnataka*

##### Whooping cough

Take the seed ash along with honey orally

- *R. Sundari, Dingdigul, Tamil Nadu*

### Uses in Classical Codified Literature

Bark is used as poultice for pimples<sup>18</sup>; and bark juice is given orally to cure intestinal worms<sup>19</sup>. 'Luko'<sup>14</sup> has a stimulatory action on the endometrium and improves uterine circulation. 'Hair Loss Cream'<sup>20</sup> improves tensile strength of hair and increases hair density. Ten patents have been found on its medicinal uses for bone disorders<sup>21</sup>, skin care<sup>22</sup> etc.



## Uses of *Calotropis procera* (Ait.) R. Br. (Aak)

### NIF Database

#### Uses from Madhya Pradesh

##### Malaria

Take the leaf and bark paste orally once a day  
- Sanjay Singh Uplana, Nagda, Madhya Pradesh

##### Arthritis

Apply fried leaves on aching joint  
- Rambhajan Kushwaha, Jabalpur, Madhya Pradesh

##### Ringworm

Boil the latex in sesame oil with little turmeric and apply  
- Sanjay Singh Uplana, Nagda, Madhya Pradesh

#### Uses from other states

##### Stomach disorder

Grind the leaves with turmeric and make tablets. Take one tablet orally till the ailment gets cured  
- P. D. Walikar, Bagalkot, Karnataka

##### Knee pain

Take the leaf juice orally  
- Jyothi Bhatta, Chikmagalur, Karnataka

##### Earache

Put the latex in the ear to cure the pain  
- R. C. Chowdhary, Nagor, Rajasthan

##### Stomachache

Smear mustard oil on a leaf and apply it warm over the abdomen for immediate relief  
- Chawda Chanduben Jawanji, Gandhinagar, Gujarat

##### Skin disease

Apply the bark paste on the infected part  
- Muralilal, Jaipur, Rajasthan

##### Itching and irritation

Warm the leaves smeared with mustard oil and make a bandage on the affected body part for two to three days  
- Sukkhi Devi, Udham Singh Nagar, Uttarakhand

##### Migraine

Heat the leaf and extract the juice. Put two-three drops in the nostril in the opposite side of the head having pain  
- Indiravati Rana, Udham Singh Nagar, Uttarakhand

### Uses in Classical Codified Literature

Plant extract is used as bronchodilator<sup>23</sup>; flower buds of *Calotropis*, along with black pepper seeds and salt, are crushed to make pills the size of small peas. Two pills are taken twice daily for three days to cure malaria<sup>24</sup>; warmed leaves, smeared with oil, are applied on the aching part to alleviate rheumatic pain<sup>25</sup>. 'Muscle & Joint Rub'<sup>4</sup> is a highly effective ointment for backaches, muscular sprains and joint pains. 'Arkavaleha'<sup>26</sup>, made from this plant, is given to cure irritation of the stomach, nausea, vomiting, diarrhoea etc. Eight patents were found on the medicinal uses mainly for anti-tumor and antidotal activity<sup>27</sup> and bronchial asthma<sup>28</sup>.



## Uses of *Ficus benghalensis* L. (Bargad)

### NIF Database

#### Use from MadhyaPradesh

##### Weakness

Take few drops of latex along with sugar candy before sun rise

- Bhimsingh Thakur, Sivni, Madhya Pradesh

#### Uses from other states

##### Whooping cough

Take a spoonful of bark paste orally

- Priyanka Kumari, West Champaran, Bihar

##### Fever

Take decoction of bark orally along with a little salt

- Sohanlal Chhipa, Jhalor, Rajasthan

##### Stomachache

Tie warmed leaves on the stomach to get relief from pain

- Gajanand Maharaj, Jaipur, Rajasthan

##### Backache

Massage the latex mixed with mustard oil on the aching part

- Chen Singh Charan, Nagor, Rajasthan

##### Wound

Mix leaf ash and coconut oil to make a paste. Apply the paste topically

- Priyanka Pramanik, Purulia, West Bengal

##### Sprain

Smear lukewarm paste of the bark on the site of the sprain

- Arun Ghosh, Bankura, West Bengal

##### Heel crack

Apply the latex topically

- Priyanka Pramanik, Purulia, West Bengal

### Uses in Classical Codified Literature

Aerial roots' paste is mixed with salt after filtering and taken once a day<sup>29</sup> for diabetes; decoction of plant is applied externally on wounds and ulcers<sup>30</sup>; latex is given orally to cure bronchitis<sup>31</sup>. 'Anti-Dandruff shampoo'<sup>4</sup>, a product prepared from this plant in combination with other plants, is used to keep hair healthy and dandruff free. Product 'KLD Lotion'<sup>32</sup>, a multiherbal ayurvedic preparation using *Ficus*, is effective in many skin ailments such as acne marks, pimples, burns, sunburns, nappy rash etc. 'Litina'<sup>33</sup>, a herbal toothpaste made from this plant along with other plants, is good for the gums and the teeth. Four patents were found on medicinal applications of *Ficus* for antitumor<sup>34</sup> medication, wound healing<sup>35</sup> etc.



Source: NIF database

## Uses of *Jatropha curcas* L. (Ratanjyot)

### NIF Database

#### Use from Madhya Pradesh

##### Burn

Apply the leaf paste topically  
- *Virendrasinha Pavar, Neemach, Madhya Pradesh*

#### Uses from other states

##### Jaundice

Juice extracted from leaves and bark is mixed with jaggery. One tea-spoonful of this mixture is given orally  
- *Dimbeswar Gogoi, Sibsagar, Assam*

##### Tumor

Leaves are warmed after smearing with oil and tied on the tumor  
- *Madhav Shankar Rao Patil, Jalgaon, Maharashtra*

##### Skin disease

Paste made from the leaves is applied topically  
- *Madhav Shankar Rao Patil, Jalgaon, Maharashtra*

##### Thorn pain

Latex of the plant is applied on the affected part  
- *Madhav Shankar Rao Patil, Jalgaon, Maharashtra*

##### Eczema

*Jatropha* oil (60g) and bee wax (30g) is heated at 60° C and borax (1g) is added in water (10 ml); both are mixed together and stirred slowly on simmer flame. The resultant ointment is applied on the infected area  
- *Raghubir Agarwal, Hissar, Haryana*

##### Agnail

Latex is applied on the infected part  
- *Atilik Baruah, Sibsagar, Assam*

##### Piles

Juice extracted from the leaves is given orally  
- *Chingakhram Binashaki Devi, Imphal West, Manipur*

##### Veterinary practice

##### Foot & mouth disease

Seeds are ground with latex of *Calotropis gigantea* R.Br. and edible oil in small amount. The paste obtained is applied topically  
- *Gandubhai, Dang, Gujarat*

### Uses in Classical Codified Literature

Bark powder is taken orally with water to get cured from pyorrhoea<sup>36</sup>; leaves are useful in ulcer<sup>13</sup>; young branches are warmed in fire and tied on the aching joint<sup>37</sup>; and the latex is applied on the burnt part<sup>38</sup>.

'*Jatropha* tincture'<sup>39</sup> is used as a disinfectant, antiparasitic and anticoagulant. Thirteen patents have been found mainly on the medicinal uses such as for cuts, burns and wounds<sup>40</sup>.



Source: NIF Database

## Uses of *Kalanchoe pinnata* (Lam.) Pers. (Pathharchur)

### NIF Database

#### Use from Madhya Pradesh

##### Dysentery

Take the fresh leaf juice along with some cumin and ghee

- Sanjay Singh Uplana, Nagda, Madhya Pradesh

##### Wound

Apply lukewarm leaf paste topically

- Sanjay Singh Uplana, Nagda, Madhya Pradesh

#### Uses from other states

##### Injury

Put warmed leaves on the affected body part

- Onom T. Doming, East Siang, Arunachal Pradesh

##### Eye pain

Put two drops of the leaf juice in the eyes

- Susanta Kumar Manjhi, Birbhum, West Bengal

##### Stomach disorder

Take two spoonful of the leaf juice orally

- Susanta Kumar Manjhi, Birbhum, West Bengal

##### Diarrhoea

Take the leaf juice orally along with some sugar

- Bikesh Kumar, Sitamarhi, Bihar

##### Cuts & wounds

Apply the leaf paste topically

- Arun Ghosh, Bankura, West Bengal

##### Pain

Apply the leaf paste topically

- Priyanka Pramanik, Purulia, West Bengal

##### Jaundice

Take the leaf juice along with black pepper orally

- Arun Kumar Pandey, Fatehpur, Uttar Pradesh

##### Kidney stone

Grind the leaves of the plant with a piece of turmeric and extract the juice. Add some jaggery and take the preparation for ten days.

- Dimbeswar Gogoi, Sibasagar, Assam

Take the leaf juice for 10-15 days

- Sukkhi Devi, Udham Singh Nagar, Uttarakhand

### Uses in Classical Codified Literature

Plant paste is applied on forehead to alleviate headache<sup>37</sup>; leaf paste is applied externally to cure cuts and wounds<sup>41</sup>; fresh sap of plant is used for eye diseases<sup>42</sup>. Product 'Regenerating Day Cream'<sup>43</sup>, a multiherbal medicine enhances skin's tone and elasticity, helps to smooth wrinkles and fine lines. Five patents were found on the medicinal applications of *Kalanchoe* mainly as an antiobesity<sup>44</sup> medication.



Source: NIF database

## Uses of *Phyllanthus emblica* L. (Aavla)

### NIF Database

#### Uses from Madhya Pradesh

##### Hair Care

Apply the fruit juice on the scalp, keep for two hours and wash gently

- Bhimsingh Thakur, Sivni, Madhya Pradesh

##### Brain Tonic

Take the fruit powder after meal regularly

- Sanjay Singh Uplana, Nagda, Madhya Pradesh

##### Eye Sight

Take the fruit powder regularly once a day

- Bhimsingh Thakur, Sivni, Madhya Pradesh

##### Skin care

Apply the fruit juice topically

- Sangeeta Maun, Bastar, Madhya Pradesh

#### Uses from other states

##### Jaundice

Take the plant powder (5g) along with milk

- Kiran Batti, Dhamtari, Chhattisgarh

##### Wound

Apply the leaf paste topically

- Sevaram Bhaskar, Dhamtari, Chhattisgarh

##### Gray hair

Wash the hair regularly with the fruit decoction

- Sulekha Jabbar, Idukki, Kerala

##### Headache

Make bark paste using the water in which rice has been washed. Apply the paste on the forehead

- Sulekha Jabbar, Idukki, Kerala

##### Diarrhoea

Take the juice of amla with an equal quantity of lemon juice orally

- Bina Chaudhry, Kamrup, Assam

##### Gynaecological disorder

Take one spoonful of the powder of aavla, tapioca and cumin (in equal proportions) orally to cure the disorder

- Guna Ram Kanikar, Golaghat, Assam

### Uses in Classical Codified Literature

Bark and fruits are used in diarrhoea and dysentery<sup>45</sup>; fresh juice of the fruit, mixed with pure cow's butter and honey, is administered to cure obstinate hiccough<sup>45</sup>; juice relieves pain in urine trouble<sup>45</sup>; pulp (2-3g) is eaten with warm milk to get rid of headache<sup>46</sup>; powder of seeds after mixing with ghee is applied on the head to stop nasal bleeding<sup>2</sup>; fruits are taken orally to reduce acidity<sup>47</sup>; decoction of the fruit is taken to increase blood count<sup>30</sup>.

*Phyllanthus* is one of the main ingredients of well known medicines 'Triphala, Chavanprash and Amla hair oil'<sup>4</sup>. Seventy six patents have been found on its medicinal uses such as for diabetes<sup>48</sup>, liver disorders and immune deficiencies<sup>49</sup>.

## Uses of *Pongamia pinnata* (L.) Pierre (Kanjee)

### NIF Database

#### Use from Madhya Pradesh

##### Skin disease

Apply the seed oil topically and take bath after two hours of application

- Rambhajan Kushwaha, Jabalpur, Madhya Pradesh

#### Uses from other states

##### Hair care

Mix seed oil with pounded seeds of *Nyctanthes arbor-tristis* L. and apply on the head

- Rani B. Bhagat, Pune, Maharashtra

##### Asthma

Take orally two spoonful of the decoction of the leaves of *kanjee*, *Adhatoda vasica* Nees. and roots of *Achyranthes aspera* L., *Solanum xanthocarpum* Schrad. & Wendl.

- Tolabai Gameti, Udaipur, Rajasthan

##### Wound

Mix the seed oil (100ml) with burnt leaves of *Phyllanthus fraternus* Webst. (250g) and apply on the wound

- Davalal Gameti, Udaipur, Rajasthan

##### Toothache

Brush the teeth with its stem

- Rahul Kumar Gupta, Hazaribag, Jharkhand

##### Fever

Grind the seeds (10g) and black pepper (2nos), make pellets of gram size and take orally

- Devendra Kumar, Hazaribag, Jharkhand

#### Uses in Classical Codified Literature

Dried flower powder is taken orally to reduce blood sugar<sup>37</sup>; juice extracted from green fruits is mixed with mustard oil and applied in case of rheumatic pain<sup>50</sup>; and fresh bark extract is administered orally to cure bleeding piles<sup>51</sup>.

'Erina Plus gel'<sup>4</sup> acts as a stimulant and helps in increasing the blood supply to skin. It prevents hair loss and skin disorders. 'Face Treatment Cream'<sup>52</sup> acts as a revitalizer, moisturizer and anti-wrinkle skin cream, and also works on dark circles and puffiness around the eyes. Ten patents were found on its medicinal applications mainly for hair care<sup>53</sup>, skin diseases<sup>54</sup>.



## Uses of *Shorea robusta* Gaertn. f. (Sal)

### NIF Database

#### Use from Madhya Pradesh

##### Wound

Apply the bark paste topically  
- Ramlal, Dindori, Madhya Pradesh

#### Uses from other states

##### Lumbago

Soak parboiled rice (100g) in water overnight. Make a paste, spread it on a sal leaf and burn the leaf. Take a spoonful of ash along with water on an empty stomach  
- Mukta Naik, Keonjhar, Orissa

##### Skin disease

Apply the bark powder over the affected part  
- Sneha Suman, Hazaribag, Jharkhand

##### Burn

Apply the dried bark powder topically  
- Sneha Suman, Hazaribag, Jharkhand

##### Wound

Grind gum (50g) and cook in cow's ghee (250g). Apply the mixture topically  
- Satyanarayan Sain, Sikar, Rajasthan

### Uses in Classical & Codified Literature

Bark juice is given orally to combat diarrhoea<sup>19</sup>; gum is externally applied to get relief from cuts and wounds<sup>55</sup>; and the plant acts as an antipyretic agent<sup>56</sup>. Product 'Foot Care Cream'<sup>4</sup> is useful for elimination of cracks in the skin of the heels. 'Drops for Gum'<sup>57</sup>, made from *Sal* along with other herbs, acts as an oral antiseptic and astringent. Fourteen patents have been found on its various uses mainly for the treatment of asthma and hypertension<sup>58</sup>.





## Uses of *Solanum xanthocarpum* Schrad. & Wendl. (Bhatkataiya)

### NIF Database

#### Use from Madhya Pradesh

##### Toothache

Extract juice from the whole plant, boil it and take the steam orally

- Santram Yadav, Dindori, Madhya Pradesh

##### Fever

Take the root juice orally thrice a day

- Rambhajan Kushwaha, Jabalpur, Madhya Pradesh

##### Gastrointestinal disorders

Take the leaf juice along with black pepper for immediate relief

- Sanjay Singh Uplana, Nagda, Madhya Pradesh

#### Uses from other states

##### Eye pain

Put a couple of drops of the fruit juice in the eye to get rid of pain

- Kamlesh Patil, Jalgaon, Maharashtra

##### Toothache

Inhale the fumes of the seeds burnt in coconut shell

- Ramathayu, Idukki, Kerala

##### Mouth ulcer

Take the fruit juice orally with a little salt

- O. Ibobi Devi, Bishnupur, Manipur

##### Fever

Take the root powder orally to cure fever

- Kamlesh Patil, Jalgaon, Maharashtra

Take the fruit juice orally along with honey

- Shijagurumayum Sandhyarani Devi, Bishnupur, Manipur

##### Ear pus

Put 2-3 drops of the root decoction in the ear

- Kamlesh Patil, Jalgaon, Maharashtra

### Uses in Classical & Codified Literature

Extract of dried flowers is administered orally to cure fever<sup>3</sup>; extract of fruit and seed is taken orally to combat cold<sup>59</sup>; the plant acts as a gastric stimulant<sup>3</sup>. Product 'Diakof'<sup>4</sup> and 'Koflet'<sup>4</sup> made from *Solanum* is beneficial for both dry and productive cough. Five patents have been found on its various medicinal uses such as for treating bronchial asthma<sup>60</sup> and cancer<sup>61</sup> etc.



Source:SRISTI Database

## Uses of *Sphaeranthus indicus* L. (Gorakhmundi)

### NIF database

#### Use from Madhya Pradesh

##### Weakness

Take the decoction of the whole plant orally  
- *Bhimsingh Thakur, Sivni, Madhya Pradesh*

#### Uses from other states

##### Headache

Take two spoonful of the leaf juice orally  
- *Vilas Shantaram Patil, Jalgaon, Maharashtra*

##### Bodyache

Apply the flower juice on the body  
- *Tarun Suri, Muzaffar nagar, Uttar Pradesh*

##### Fever

Take two spoonful of the leaf juice orally  
- *Vilas Shantaram Patil, Jalgaon, Maharashtra*

##### Stomachache

Chew the fresh leaves for immediate relief  
- *Vilas Shantaram Patil, Jalgaon, Maharashtra*

##### Obesity

Take the juice of flowering heads (100ml) with milk (100ml) orally  
- *Susila Vaidy, Vellore, Tamil Nadu*

### Uses in Classical & Codified literature

Extract of the dried aerial parts is taken to get rid of indigestion<sup>62</sup>; juice of the fresh leaves is mixed with little amount of milk and sugar and consumed to combat cough<sup>62</sup>; and the plant acts as a diuretic<sup>37</sup>. Product 'Diabecon'<sup>4</sup> minimizes long-term diabetic complications. 'Geriforte'<sup>4</sup> facilitates respiratory functions, and assists cardiovascular functions. Six patents have been found on its various medicinal applications mainly on inflammatory disorders<sup>63</sup> and cancer<sup>64</sup>.



Source: [http://static.flickr.com/51/120815845\\_f30c6c611d.jpg](http://static.flickr.com/51/120815845_f30c6c611d.jpg)

## Uses of *Terminalia arjuna* (Roxb. ex. DC.) Wt. & Arn. (Arjun)

### NIF database

#### Uses from Madhya Pradesh

##### Hypertension

Take the bark decoction orally  
- Bhimsingh Thakur, Sivni, Madhya Pradesh

##### Tuberculosis

Take the bark decoction orally  
- Pyarelal Dixit, Jabalpur, Madhya Pradesh

#### Uses from other states

##### Cardiac disorder

Take one cup of the tea made from bark powder on an empty stomach  
- Mahesh Bijarana, Nagor, Rajasthan

##### Gynaecological disorder

Boil the bark of arjun, ashoka (*Saraca asoca* (Roxb.) Wild.) and babul (*Acacia nilotica* (L.) Willd. ex Del.) (100g each) in a litre of water till the solution remains one-third. Take a spoonful of the decoction orally twice a day  
- Tarachand Goswami, Lohardanga, Jharkhand

##### Anaemia

Take the decoction of bark, leaf and fruit orally  
- Gobardhan Netam, Dhamtari, Chhattishgarh

##### Bodyache

Chew the tender bark  
- Mohammad Shoab, Gopalganj, Bihar

##### High blood pressure

Take one cup of the decoction of bark on an empty stomach for 21 days  
- Pusaram Sahoo, Durg, Chhattisgarh

### Uses in Classical & Codified Literature

Decoction of the bark is administered orally to get relief from chest pain<sup>65</sup>; bark powder is taken to combat diabetes<sup>54</sup>; and the paste of bark along with leaves of night jasmine is applied externally to cure injuries<sup>66</sup>. Product 'Abana'<sup>4</sup> regulates serum lipids by lowering the cholesterol and thus improves the contractility of the heart. 'Arjuna'<sup>67</sup> promotes effective cardiac functioning and regulates blood pressure. Seven patents have been found on its medicinal uses mainly on cancer<sup>68</sup> and hyperlipidemia<sup>69</sup>.



Source: [http://farm1.static.flickr.com/201/517713786\\_6e7d8014d6.jpg?v=0](http://farm1.static.flickr.com/201/517713786_6e7d8014d6.jpg?v=0)

## Uses of *Tinospora cordifolia* (Willd.) Miers ex Hk. f. & Th. (Gurbel)

### NIF Database

#### Use from Madhya Pradesh

##### Fever

Take the lukewarm stem juice orally  
- Chokhelal Ayam, Dindori, Madhya Pradesh

##### Gastric problem

Take the stem decoction along with ginger powder once a day  
- Sanjay Singh Uplana, Nagda, Madhya Pradesh

##### Malaria

Take the stem decoction once a day till the ailment cures  
- Manoj Thakur, Indore, Madhya Pradesh

#### Uses from other states

##### Typhoid

Take the decoction or powder of the stem orally  
- Yanueg Jamoh Lego, East Siang, Arunachal Pradesh

##### Asthma

Take two spoonful of the leaf juice orally with honey for 40-42 days  
- Ramabandhu Mahajan, Jalgaon, Maharashtra

##### Diabetes

Take leaf powder (¼ spoon) regularly  
- Patel Singh, Hissar, Haryana

##### Rheumatism

Mix the plant (25g), dry ginger (5g) and sesame oil (5g), soak in water overnight. Take the filtered solution next morning  
- Jagjit Bahadur, Sitapur, Uttar Pradesh

##### Piles

Boil, dry and grind the whole plant (50g) into a fine paste. Make tablets and take one tablet thrice a day for 3-5 days  
- Pukhram Angouba Singh, Bishnupur, Manipur

#### Veterinary practice

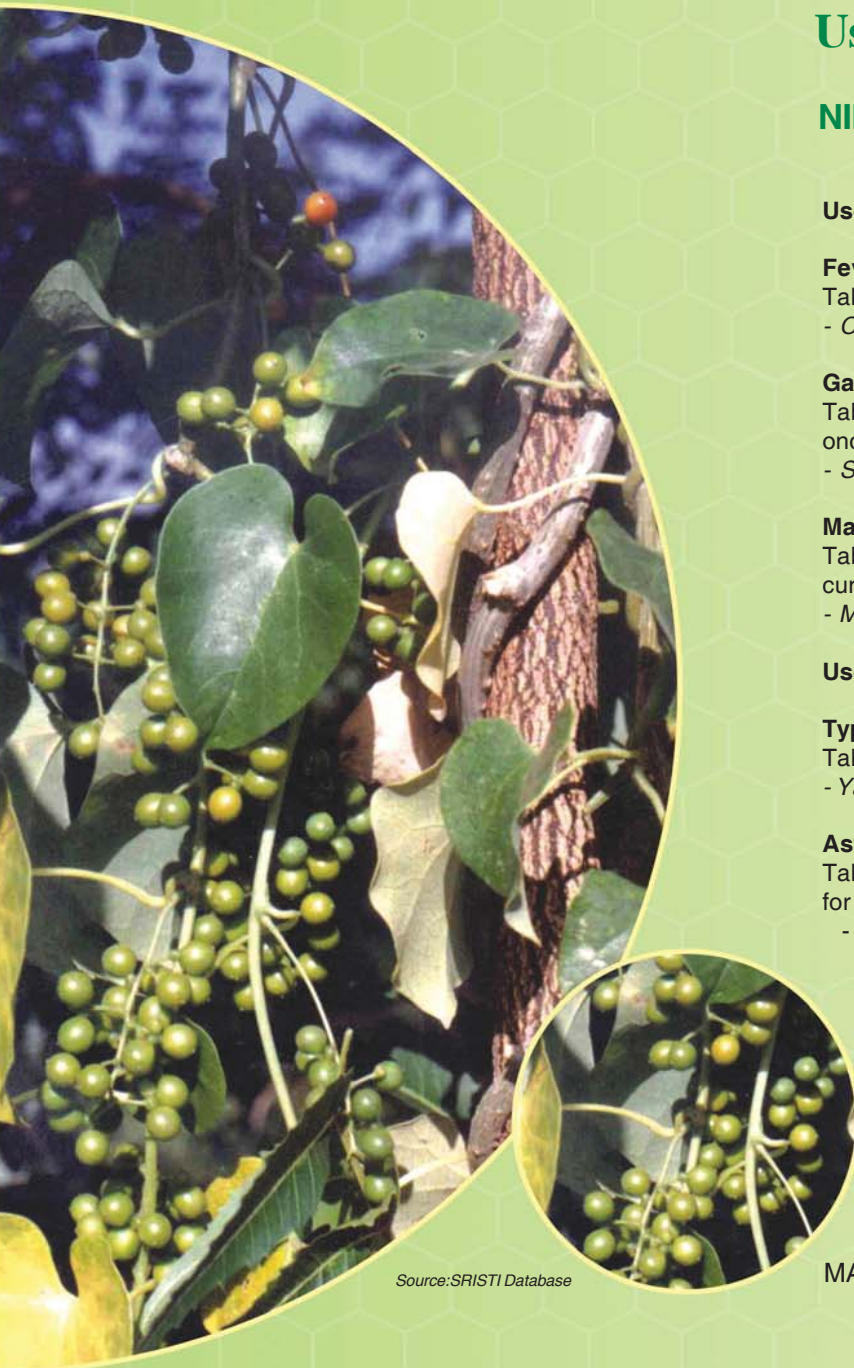
##### Anestrous

Grind the plant, along with the bark of *Cassia fistula* L. and leaves of *Artocarpus heterophyllus* Lam., and take orally  
- Honnegowda, Bengaluru rural, Karnataka

### Uses in Classical Codified Literature

Powdered roots are taken to cure mouth ulcer<sup>70</sup>; powdered plant is administered orally with honey to get relief from stomach disorder<sup>69</sup>; the stem is bitter and is used as anthelmintic<sup>13</sup>; and decoction of the plant is given orally to cure diarrhoea<sup>71</sup>.

*Tinospora* is a well known medicinal plant and is used to cure a number of diseases in combination with other plants with brand names 'Geriforte, Diabecon'<sup>14</sup> etc. More than a hundred patents were found on its medicinal applications mainly as an antiallergic<sup>72</sup> and for cancer<sup>73</sup>.



Source:SRISTI Database

## Promotion of knowledge based enterprises and lateral markets

National Innovation Foundation in association with regional collaborator Peermade Development Society, Idukki, Kerala initiated a massive campaign through women self help groups to mobilize knowledge, innovations and practices among women. In this exercise more than ten thousand traditional knowledge practices were documented (many were quite common) from the field of cosmetics, nutraceuticals, health care, cooking etc., from just one block of a district in Kerala. This exercise has indicated the immense potential of knowledge at the grassroots, which can be converted into products and viable enterprises for augmenting livelihood options for rural women.

Initially four products having commercial potential were taken up for enterprise development. All knowledge holders of the four products were constituted as a single SHG named Amala and SSI registration was done. Nutrient supplement, baby massage oil and incense stick are the products selected for the initial intervention. The products were tested and standardized. All products were made available in the market under the brand name SAHYA.

The products were formally launched on August 11, 2007 in an auspicious function, attended by large number of women including the innovators. Amala enterprise was supported through the Micro Venture Innovation Fund scheme of NIF.



## Herbal Formulations for Healthy Crops

### SRISTI SHASTRA

*Arkhiben Vankar, Ranabhai Kamaliya, Banidan Gadhvi, Gemal Rana, Rajnikant Patel, Ahmadbhai Kadivala, Gujarat.*

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

*Popatbhai Rupabhai Jambucha, Gujarat*

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

*Community Knowledge, Gujarat*

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. Some times 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 termites.

### SRISTI PRAYAS

*Community Knowledge, Gujarat*

It is a highly effective formulation to act as a herbal growth promoter, which 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

*Community Knowledge, Gujarat*

A herbal growth promoter, which helps in production of excellent quality organic food grain. Constant use of this formulation not only increases the yield but also reduces the toxic contamination in our food and environment.



## Herbal Formulations for Livestock and Poultry



### Coccicure

*Sudakarbhai K. Gaudi & Jeevalbhai M. Gaudi, Dang, Gujarat*

It is a unique herbal medication for prevention and curing of Coccidiosis (*Eimeria* sp infections) in Poultry. The primary function of the medication is to reduce the oocytes maturation and affects the life cycle of various *Eimeria* species.

### Poultmax

*Community knowledge, Valsad, Dang, Gujarat*

It is a unique herbal medication for promoting poultry immunity. It cures symptoms like greenish diarrhoea, conjunctivitis, nasal sputum, drop in egg production and respiratory distress in poultry. About 30g/100 birds for 0-4 weeks & 60g/100 birds for 4-8 weeks may be administered for seven days in stress or for three days before and three days after expected stress.

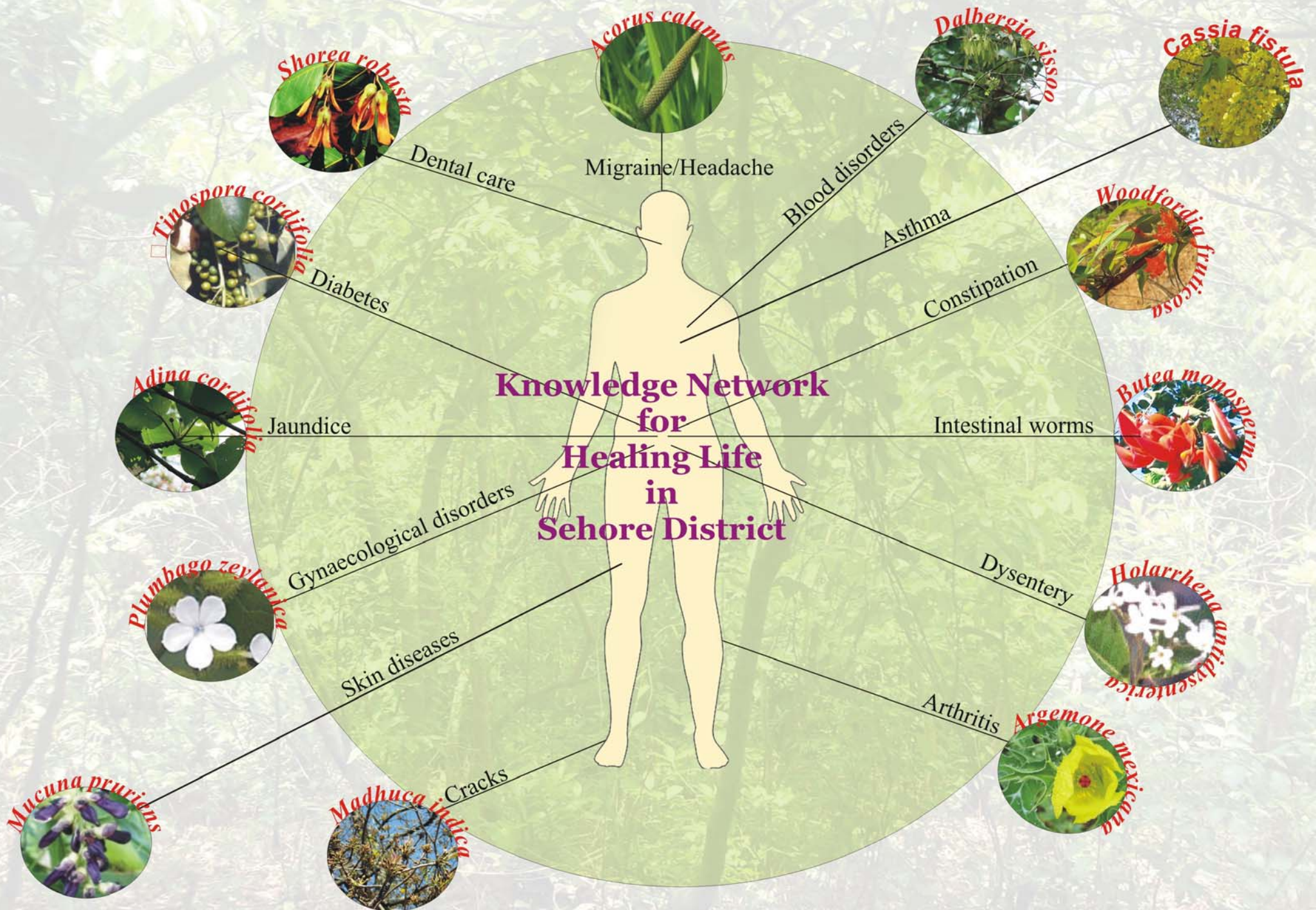
### Mastiherb

*Ukhardiyabhai S. Raot, Dang, Gujarat*

Mastiherb is a unique intramammary herbal medication for curing mastitis in animals. Clinical trials indicated efficacy of the medication over subclinical mastitis; clinical mastitis and chronic mastitis. It was also validated in case of mastitis due to *Staphylococcus aureus*. The dose rate was found to be single intra mammary infusion for minimum three days after adequate standardization.



These formulations are based on traditional knowledge of farmers and developed by Sadbhav-SRISTI Sanshodhan Laboratory ([www.sristi.org](http://www.sristi.org)). These products are licensed to Matrix Biosciences Pvt. Ltd, Hyderabad, Andhra Pradesh. The benefits are shared with the knowledge providers, communities, nature, those who add value and other stakeholders in the knowledge and value chain.



An illustrative example of local biodiversity and knowledge network for human health  
 (All the species are found in Sehore district)



## PART III

# INNOVATIONS for MADHYA PRADESH

This section contains details of national innovations, which are deemed suitable for introduction in Madhya Pradesh





**A Muruganandam**  
Tamil Nadu

## Sanitary napkin making machine: An option for women entrepreneurship

Sanitary napkins, a universally needed product, have a very low penetration in India due to high price and the traditional trend of using cheaper but unhygienic old cloth pieces. The innovator has developed a machine that produces quality sanitary napkins at a low cost.

One can prepare sanitary napkins with industry standard raw materials while cutting down the cost in production. It requires three to four persons to produce two pads per minute. Costing less than half of conventional options, this machine produces sanitary pads @ Rs.1 to Rs. 1.50 per pad approximately.

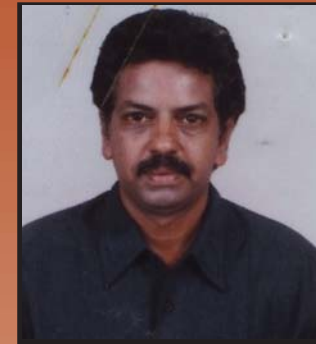
The innovator prefers to sell the napkin making machinery only to self-help groups of women. He has also designed a napkin vending machine such that one can put a coin and get a pad. With the support from the Micro Venture Innovation Fund scheme of NIF, the innovator has been able to install over fifty units in seven states.



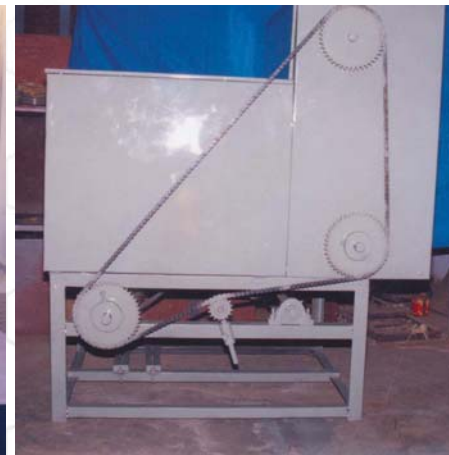
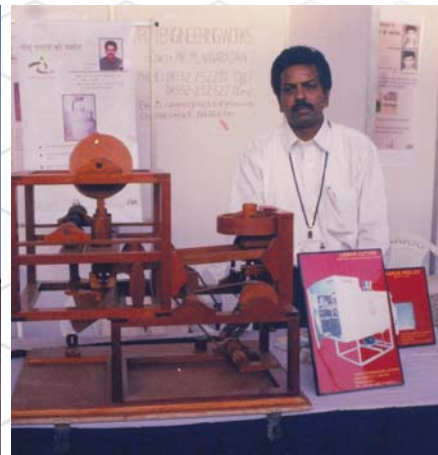
## Garlic peeling and lemon cutting machine

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

The second product is also used in pickle industry, but for cutting lemons. It is a cost effective machine, having innovative design, with continuous feeding system. It performs precise and standard cutting of large quantity of lemons in uniform shape and size. It can be operated by one person and cuts lemon into eight equal pieces. The innovator has been able to run a good business with the financial support of Micro Venture Innovation Fund and marketing effort of NIF.



**M Nagarajan**  
Tamil Nadu





**Raghav Gowda**  
Karnataka

## Manual milking machine

Safe milking of cows/buffaloes is a requirement across rural India and this product is an efficient step in that direction. It is a low cost, manually operated device that helps farmers to milk the animal hygienically and also reduces drudgery in the process.

The machine has simple controls and can be easily operated by women as well. The creation of suction and low vacuum makes it suitable for other applications also. NIF has been giving marketing support to the innovator. As a result, this machine has also been sold to customers in Phillipines, Uganda and Ethiopia apart from India.



## Maruti jhoola- the health care chair

Modern life with its fast pace and sedentary lifestyle has created the need for solutions incorporating relaxation and invigoration. Maruti Jhoola is a unique health chair with multiple capabilities, functions and settings for various postures and seating dynamics.

It is ergonomically designed and serves the purpose of seating as well as exercising, with a capacity to accommodate a person weighing 120 kgs. It can double up as a hammock or a jhoola. The health chair has established itself as useful for people suffering from arthritis and joint ailments. To facilitate marketing an entrepreneur has been engaged. Earlier, lot of cost was spent on packaging and transportation of the chair. It is now being redesigned and the cost may come down.



**Sakrabhai Prajapati**  
Gujarat





**N Sakthimainthan**  
Tamil Nadu

## Hand operated water lifting device

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

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

The Innovation has been taken up for value addition at CMERI Durgapur (WB) through the NIF-CSIR JIC Fellowship Scheme.



## Mobile operated switch and multi-media poster

Imagine a village where the farmer has the luxury of being able to stay at home and switch his irrigation pump in the faraway field on or off as required during the day or at night. This is made possible by this innovation, which uses the power of mobile telephony to trigger electrical control switches.

The farmer can remotely know the status of the pump in his cell phone and turn the motor on or off by calling the particular configured number. It activates the switching by certain number of rings and hence incurs no call charges. Prem Singh has developed several other innovations, one of which is the viewer triggered multi-media poster. If any agency wants to communicate some graphic message with different language audios or videos, this multi-media poster can be very useful. NIF facilitated a Mumbai based company to purchase two hundred units of the talking poster worth around eight lakh rupees for diffusion in various states. These were made available in five local languages.



**Prem Singh Saini**  
Haryana





**Arvindhbai Patel**  
Gujarat

## Auto air kick pump & the natural water cooler

This innovation is a low cost, portable, compact aid to inflate tyre tubes/punctures of any vehicle having kick start or auto start mechanism so as to fix the problem on the spot and enable the rider to reach the nearby gas station or repair shop. This device uses the engine as the compressor for pumping air into the tube. A pinch of polymer granules is also inserted in the tube to seal the leakage in the tube.

Arvindhbai won a National Award in NIF's Second National Competition for Grassroots Innovations and Traditional Knowledge in 2002. NIF, apart from filing a patent in his name, facilitated sales of a few hundred pieces to customers in Assam and Arunachal Pradesh through dealership technology licensing and local entrepreneurs. The technology is available for licensing to entrepreneurs in different states.

**Water Cooler:** We already have refrigerators that operate on the principle of heat transfer and earthen pots that work on the principle of evaporation to cool water today. Arvindhbai



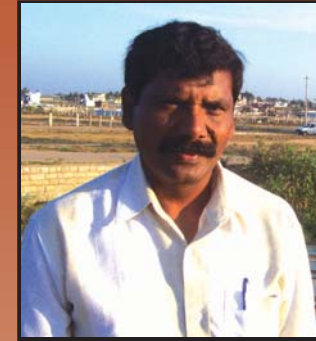
has combined both features. In his natural water cooler, water is passed through cotton string covered copper coils, which are continuously being moistened by a dripper. Evaporation of water from lining on the coil cools the water inside. Cool water without electricity, isn't it a nice idea!



## Power generation through sewage

There is a search going around the world for solutions that harness alternate energy sources to generate electricity. The innovator has developed a system that generates energy from slow moving sewage or any other source of flowing water.

In this arrangement, electricity is generated when the slow moving sewage/water is passed through a cylindrical drum. The helical blades inside the drum rotate it and generate power. The capacity of the existing pilot unit is 30 kVA. This technology can have a tremendous impact on the generation of power from low velocity, high volume discharge of effluents from industries and civil sewage processing plants. NIF has been actively following up with national and international entities for partnership in taking this innovation forward. NIF has also filed a patent for the technology in the innovator's name. Public agencies such as municipal authorities can particularly help in testing its utility.



**K Balakrishna**  
Karnataka





**Madanlal Kumawat**  
Rajasthan

## Improved multicrop thresher

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

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

The innovator has been provided working capital for his enterprise from the Micro Venture Innovation Fund of NIF. More than a hundred farmers have bought his thresher.



## Trench digging machine

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

The trench digging unit developed by the innovators can be fitted to any tractor. The modified unit has a hydraulic lever to adjust digging depth and to maneuver the running unit, a planetary gear system and motion converter unit to achieve speed reduction and deliver power from the tractor. The compact machine can dig narrow and deep channels evenly, on hard and soft soil conditions. In one hour, it can dig 65 meters long, 5 feet deep and 14 inches wide pit, while consuming only 2.5 liters of diesel per hour. The equipment costs less than half that of imported models. It is even used by the local telephone department to lay cables.



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





**Prakash S Raghuvanshi**  
Uttar Pradesh

## Kudrat 9- An improved variety of wheat

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

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



## Bullet Santi-motorcycle based multipurpose plough

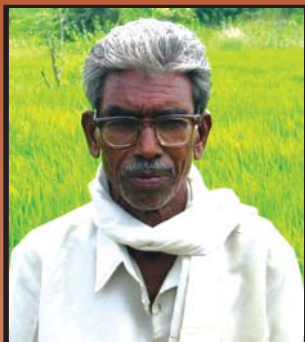
Like other drought prone regions, Amreli region, from where the innovator belongs, has severe labor shortage, few farm animals or mechanized implements to conduct farming operations. To address this need, the innovator designed a unique unit: the 'Bullet Santi'.

Using the chassis, drive and power of an Enfield Bullet motorcycle, the innovator has retrofitted an attachment with two wheels at the rear with a tool bar to fit various farm implements. This helps in ploughing, weeding and sowing seeds. Being a unique local solution, the machine has proved to be cost effective and fuel efficient. Bullet Santi can plough an acre of land in half an hour consuming only two litres of fuel. Innovator got a patent in India and USA. Given the fact, many other users and innovators copied this technology, he has appreciated 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'.



**Mansukhbhai Jagani**  
Gujarat





**Dadaji Ramaji Khobragade**  
Maharashtra

## HMT: An improved paddy variety

Khobragade selected and bred the HMT rice variety from the conventional 'Patel 3', a popular variety developed by Dr. J. P. Patel, JNKV Agriculture University, Jabalpur. He succeeded after five years of continuous study and research on a small farm owned by him without any support from the scientific community. This variety has an average yield of 40 – 45 quintals per hectare with short grains, high rice recovery (80 %), better aroma and cooking quality in comparison with the parent ones. Most remarkable feature of the variety is the thinness of grain. It has been included as a standard reference for thinness by Protection of Plant Variety and Farmers' Right Authority (PPVFRA).

He won a National Award in NIF's Third National Competition for Grassroots Innovations and Traditional Knowledge in 2005. NIF has filed an application under PPVFRA 2001 to register his variety. Apart from HMT he has also developed six other paddy varieties namely DRK, Vijay Anand, Nanded Chinur, Nanded 92, Deepak Ratna and Nanded Hira. He regrets that local agricultural university took the credit merely for purifying the seeds and did not give him the due honour. HMT has diffused in more than one lakh acres in five states.



## Herbal growth promoter

A herbal plant growth promoter, which is effective in protecting the plants from a broad spectrum of pests apart from providing necessary nutrition has been developed. It is named as “*Kamaal*” meaning wonderful, due to its performance. It is effective in field crops as well as in vegetable crops.

The main ingredients of the product are “*aak*” (*Calotropis gigantea*), “*reetha*” (*Sapindus trifoliatus*), “*dhatura*” (*Datura metel*), “*neem*” (*Azadirachta indica*), Tobacco (*Nicotiana tabacum*), and “*bhang*” (*Cannabis sativa*), etc.

The innovator won a Consolation Award in NIF’s Fourth National Competition for Grassroots Innovations and Traditional Knowledge in 2007. He has also been supported under the Micro Venture Innovation Fund of NIF for commercialising “*Kamaal*”. The product is a good hit in the local market and is fetching steady income for the innovator. This product has also been supplied for use in the gardens in the Rashtrapati Bhavan with encouraging results.



**Ishwar Singh Kundu**  
Haryana



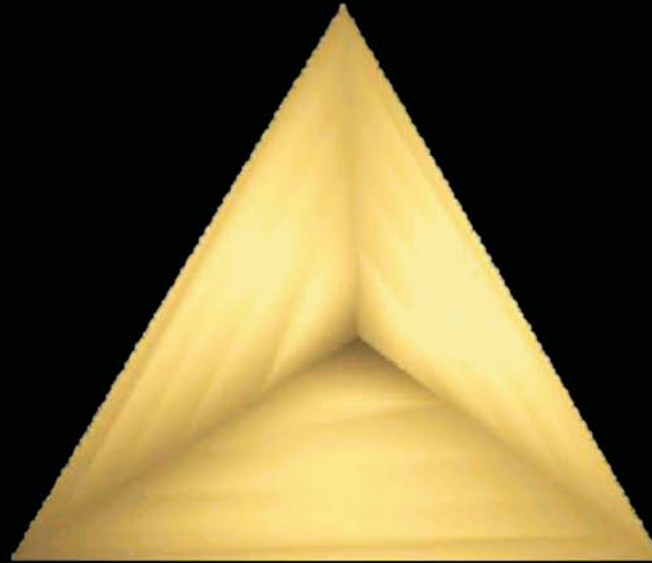
## End notes & References

- 1) Akhtar, M.S. 1992. Hypoglycaemic activities of some indigenous medicinal plants traditionally used as antidiabetic drugs. *J. Pak. Med. Ass.* 42(11): 271-277.
- 2) Reddy, M.B., Reddy, K.R. and Reddy, M.N. 1989. A survey of plant crude drugs of Anantapur district, Andhra Pradesh, India. *Int. J. Crude Drug Res.* 27(3): 145-155.
- 3) Zagari, A. 1992. *Medicinal plants*. Vol. 4. (5th ed.) Tehran, Iran. Tehran University Publications, p. 969.
- 4) Himalaya healthcare products, <http://www.himalayahealthcare.com/products.htm>, downloaded on 12.04.2009.
- 5) Guangkui, Z. 2008. *Chinese traditional medicine preparation for curing laryngopharyngitis*. Hunan Times Sunlight Pharmaceu (CN). (Pat no. CN101116680 dt. 06.02.2008; <http://v3.espacenet.com>, downloaded on 20.08.2008).
- 6) Muthuswamy, M.P. 2003. *Polyherbal composition for the treatment of Bronchial Asthma and the process*. Dalmia C.T. for Res and Dev, India (Pat no. WO03055558 dt.10.07.2003; <http://v3.espacenet.com>, downloaded on 20.08.2008).
- 7) Siddiqui, M.B. and Husain, W. 1994. Medicinal plants of wide use in India with special reference to Sitapur district, Uttar Pradesh. *Fitoterapia*. 65(1): 3-6.
- 8) Bhattarai, N.K. 1989. Traditional phytotherapy among the Sherpas of Helambu, Central Nepal. *J. Ethnopharmacol.* 27(1/2): 45-54.
- 9) Rao, R.R and Jamir, N.S. 1982. Ethnobotanical studies in Nagaland. I. Medicinal Plants. *Econ. Bot.* 36: 176-181.
- 10) <http://www.ayurvedicherbsdirect.com/menstricare-himalaya-p-32.html>, downloaded on 08.11.2008.
- 11) Singh, R., Padiyar, A., Kanaujia, A. and Sharma, N. K. 2005. *Herbal formulation comprising extracts of Adhatoda, Hedychium and Curcuma as cough syrup*. Ranbaxy Lab Ltd. (Pub no. WO2005077393 (A1) dt. 25.08.2005; <http://v3.espacenet.com>, downloaded on 08.11.2008).
- 12) Shanghvi, D.S., Mungre, A.P. and Zala Y.R. 2003. *New anti-asthmatic drug asmakure from indigenous herbs to cure the disease asthma*. Sun pharmaceutical Ind. Ltd (Pat no. WO03030920 (A1) dt.17.04.2003; <http://v3.espacenet.com>, downloaded on 08.11.2008).
- 13) Prajapati, N.D., Purohit, S.S., Sharma, A.K. and Kumar, T. 2007. *A Handbook of Medicinal Plants*. Jodhpur, Agrobios (India), Section-II, pp. 1-554.
- 14) Mendez, X.M. 1937. Pharmacologic data of some Mexican remedies. *J. Amer. Inst. Homeopathy*. 30: 271-277.
- 15) <http://books.google.co.in/books?id=oPn0aVTsy2IC&pg=PA736&lpg=PA736&dq=argemone+mexicana+for+herbal+product&source>, dt. 29.08.2008.
- 16) Arora, S.K., Sanganabhatla, N., Srivastava, V., Saraf, D.B. and Gupta, L.K. 2003. *Herbal composition for treating various disorders including psoriasis, a process for preparation thereof and method for treatment of such disorders*. Lupin Ltd. (India). (Pub no. WO03057133 dt. 17.07.2003; <http://v3.espacenet.com>, downloaded on 30.08.2008).
- 17) Charron, D. 2006. *Method and topical formulation for treating headaches*. Amershire Investment Corporation, Canada. (Pat no. 20060165812 dt. 27.07.2006; <http://appft1.uspto.gov>, downloaded on 30.08.2008).
- 18) Khan, M.A., Khan, T. and Ahmad, Z. 1994. Barks used as source of medicine in Madhya Pradesh, India. *Fitoterapia*. 65 (5):444-446.
- 19) Bhattarai, N.K. 1993. Medical ethnobotany in the Rapti zone, Nepal. *Fitoterapia*. 64 (6):483-493.
- 20) SBL Homeopathy Clinic, <http://www.sblglobal.com/tranquil.html>, downloaded on 04.11.2008.
- 21) Maurya, R., Singh, G., Murthy, P.S.N., Mehrotra, S., Singh, D., Bhargava, B. and Singh, M.M. 2007. *Pharmaceutical composition containing Butea isoflavones for the prevention/treatment of bone disorders and a process for the preparation thereof*. CSIR, New Delhi. (Pub no. WO/2007/099432 dt. 07.09.2007; <http://www.freepatentsonline.com>, downloaded on 29.08.2008).
- 22) Hirano, A. 2003. *Skin care preparation*. TS AASU KK, Japan. (Pub no. JP2003113031 dt.18.04.2003; <http://www.freepatentsonline.com>, downloaded on 29.08.2008).
- 23) Al-Yahya, M.A. 1986. Phytochemical studies of the plants used in traditional medicine of Saudi Arabia. *Fitoterapia*. 57(3): 179-182.
- 24) Anis, M. and Iqbal, M. 1986. Antipyretic utility of some Indian plants in traditional medicine. *Fitoterapia*. 57(1): 52-55.
- 25) Sebastian, M.K. and Bhandari, M.M. 1984. Medico-ethno botany of Mount Abu, Rajasthan, India. *J. Ethnopharmacol.* 12(2): 223-230.
- 26) Herbalcure India, <http://www.herbalcureindia.com/herbs/arka.htm>, dt. 17.11.2008
- 27) Kiss, R. 2005. *Extract with anti-tumor and anti-poisonous activity*. Unibioscreen S.A., Belgium (Pub no. MXPA05003634 (A) dt. 14.12.2005; <http://v3.espacenet.com>, downloaded on 21.11.2008)
- 28) Muthuswamy, M.P. 2003. *Polyherbal composition for the treatment of Bronchial Asthma and the process*. Dalmia C.T. for Res and Dev (IN) and Murali Panchapagesa Muthuswamy (IN). (Pat no. WO03055558 dt.10.07.2003; <http://v3.espacenet.com>, downloaded on 20.08.2008).
- 29) Singh, K.K. and Maheshwari, J.K. 1994. Traditional phytotherapy of some medicinal plants used by the Tharus of the Nainital district, Uttar Pradesh, India. *Int. J. Pharmacog.* 32 (1):51-58.
- 30) John, D. 1984. One hundred useful raw drugs of the Kani tribes of Trivandrum forest division, Kerala, India. *Int. J. Crude Drug Res.* 22 (1): 17-39.
- 31) Singh, V.K., Ali, Z.A., Zaidi, S.T.H. and Siddiqui, M.K. 1996. Ethnomedicinal uses of plants of Gonda district forests of Uttar Pradesh, India. *Fitoterapia*. 67 (2):129-139.
- 32) Depsonpharma, <http://www.depsonpharma.com> downloaded on 05.11.2008.
- 33) Litna, <http://www.litna.com/company2.htm>. downloaded on 05.11.2008.
- 34) Bassa, B.V. 2003. *Antitumor agent*. Biozak, Inc., San Jose, Canada. (Pat no. 6660309 dt. 09.12.2003; <http://www.freepatentsonline.com>, downloaded on 08.11.2008).
- 35) De Souza, A. 2005. A herbal composition having potent antimicrobial and wound healing properties. Mehta, D.S., Vaidya, R.A., Vaidya, A.B. and De Souza, A. Michel Apartment, Mumbai. (Pat no. WO/2005/115090 dt. 08.12.2005; <http://www.freepatentsonline.com>, downloaded on 8.11.2008).
- 36) Manandhar, N.P. 1995. An inventory of some herbal drugs of Myagdi district, Nepal. *Econ. Bot.* 49 (4): 371-379.
- 37) Sahu, T.R. 1984. Less known uses of weeds as medicinal plants. *Ancient. Sci. Life.* 3 (4): 245-249.
- 38) Manandhar, N.P. 1995. An inventory of some vegetable drug resources of Makawanpur district, Nepal. *Fitoterapia* 66 (3): 231-238.



- 39) Tropilab, <http://tropilab.com/jatrophatincture.html>, dt. 30.06.2008.
- 40) Pushpangadan, P., Mehrotra, S., Rawat, A.K.S., Rao, Ch.V., Ojha, S.K. and Aziz, I. 2008. *Herbal composition for cuts, burns and wounds*. CSIR, New Delhi. (Pat no. 7344737 dt.18.03.2008; <http://patft.uspto.gov>, downloaded on 23.10.2008).
- 41) Bhandary, M.J., Chandrashekar, K.R. and Kaveriappa, K.M. 1995. Medical ethnobotany of the Siddis of Uttara Kannada district, Karnataka, India. *J. Ethnopharmacol.* 47(3): 149-158.
- 42) Martinez, M.A. 1984. Medicinal plants used in a Totonac community of the Sierra Norte de Puebla: Tuzamapan de Galeana, Puebla, Mexico. *J. Ethnopharmacol.* 11(2): 203-221.
- 43) Natural skin care, <http://www.drhauschka.co.uk>, downloaded on 08.11.2008.
- 44) Kamata Y., Toyokawa, T., Teruya, M. and Ichiba T. 2005. *Anti-obesity agent having lipase inhibiting activity and antioxidation activity*. Okinawa Prefecture. (Pat no. JP2005060334 (A) dt.10.03. 2005; <http://v3.espacenet.com>, downloaded on 08.11.2008)
- 45) Tamsang, K.P. 2004. *Glossary of Lepcha medicinal plants*, Kalimpong, India, Mani Printing Press, pp. 7-19.
- 46) Bhattarai, N.K. 1992. Folk herbal remedies of Sinhupalchok district, Central Nepal. *Fitoterapia* 63(2): 145-155.
- 47) Khanom, F., Kayahara, H. and Tadasa, K. 2000. Superoxide-scavenging and prolyl endopeptidase inhibitory activities of Bangladeshi indigenous medicinal plants. *Biosci. Biotech. Biochem.* 64(4): 837-840.
- 48) Antony, M.B. 2008. *Preparation, process and a regenerative method and technique for prevention, treatment and glycemc control of diabetes mellitus*. Alwaye, India, Arjuna Natural Extracts. (Pat no. 7378113 dt.27.05.2008; <http://patft.uspto.gov>, downloaded on 23.10.2008).
- 49) Rohatgi, S. 1996. *Ayurvedic composition for the prophylaxis and treatment of AIDS, flu, TB and other immuno-deficiencies and the process for preparing the same*. Kanpur, India. (Pat no. 5529778 dt. 13.09.1994; <http://patft.uspto.gov>, downloaded on 23.10.2008).
- 50) Chauhan, V., Suthar, A., Sapre, D., Bal-Tembe, S., Gangopadhyay, A.K., Kulkarni-Almeida, A. and Parikh, S.H. 2007. *Herbal composition for inflammatory disorders*. Nicholas Piramal India Ltd., India. ( Pub No.WO2007036900, dt.05.04.2007; <http://v3.espacenet.com>, downloaded on 23.02.2009).
- 51) Ikeda, N. 2006. *Composition for internal use*. Murase Takeshi, Japan. ( Pub No. JP2006176445, dt.06.07.2006; <http://v3.espacenet.com>, downloaded on 23.02.2009).
- 52) Mitra, S.K., Saxena, E., Dixt, M.N., Uddagiri, V.B., Marikunte, V.R., Mathad, S.A. and Shanbhag, S.V. 2006. *Novel anticancer agent, methods for obtaining the same and pharmaceutical compositions thereof*. MMI Corp., India. (Pub No. WO2006134609, dt.21.12.2006; <http://v3.espacenet.com>, downloaded on 23.02.2009).
- 53) Dwivedi, S. and Agarwal, M.P. 1994. Antianginal and cardioprotective effects of *Terminalia arjuna*, an indigenous drug, in coronary artery disease. *J. Ass. Phys. India.* 42 (4): 287-289.
- 54) Kumar, D.S. and Prabhakar, Y.S. 1987. On the ethnomedical significance of the Arjun tree, *Terminalia arjuna* (Roxb.) Wight & Arnot. *J. Ethnopharmacol.* 20 (2): 173-190.
- 55) Singh, V. 1995. Herbal folk remedies of Morni hills, Haryana, India. *Fitoterapia.* 66(5): 425-430.
- 56) Jain, S.K. 1991. *Dictionary of Indian Folk Medicine and Ethnobotany*, New Delhi, Deep Publication, pp. 1-311.
- 57) L'amar cosmecuticals, <http://www.lamarshop.com/oralcare.htm>- downloaded on 08.02.2009
- 58) Ikeda Naosuke 2006. *Composition for internal use*. Murase Takeshi, Europe. (Pub. No. JP2006176445 (A), dt.06.07.2006; <http://v3.espacenet.com>, downloaded on 12.02.2009.)
- 59) Nagaraju, N. and Rao, K.N. 1990. A survey of plant crude drugs of Rayalaseema, Andhra Pradesh, India. *J. Ethnopharmacol.* 29(2): 137-158.
- 60) Brindavanam, N.B., Katiyar, C. and Rao, Y.V. 2003. *Novel herbal composition for the management of bronchial asthma and a process of manufacturing the same*. Foley & Lardner, Bernhard D. Saxe, Washington, USA. (Pat no. 20030228383, dt. 22.05.2003; <http://www.freepatentsonline.com>, downloaded on 08.01.2009).
- 61) Mazzio, E. and Soliman, K. 2007. *Nutraceutical composition and method of use for treatment/prevention of cancer*. Elizabeth Mazzio; Florida A & M University, Tallahassee, USA. (App. no. 20070248693, dt. 25.10.2007; <http://www.freepatentsonline.com>, dt.08.01.2009).
- 62) Garg, S.C. and Kaseera, H.L. 1983. *In vitro* antibacterial activity of the essential oil of *Sphaeranthus indicus* L. *Fitoterapia.* 54 (1): 37-39.
- 63) Chauhan, V., Suthar, A., Sapre, D., Bal-Tembe, S., Gangopadhyay, A.K., Kulkarni-Almeida, A. and Parikh, S.H. 2007. *Herbal composition for inflammatory disorders*. Nicholas Piramal India Ltd., India. (Pub No.WO2007036900, dt.05.04.2007; <http://v3.espacenet.com>, downloaded on 23.02.2009).
- 64) Mitra, S.K., Saxena, E., Dixt, M.N., Uddagiri, V.B., Marikunte, V.R., Mathad, S.A. and Shanbhag, S.V. 2006. *Novel anticancer agent, methods for obtaining the same and pharmaceutical compositions thereof*. MMI Corp., India. (Pub No. WO2006134609, dt.21.12.2006; <http://v3.espacenet.com>, downloaded on 23.02.2009).
- 65) Dwivedi, S. and Agarwal, M.P. 1994. Antianginal and cardioprotective effects of *Terminalia arjuna*, an indigenous drug, in coronary artery disease. *J. Ass. Phys. India.* 42 (4): 287-289.
- 66) Rathore, A., Juneja, R.K. and Tandon, J.S. 1989. An iridoid glucoside from *Nyctanthes arbortristis*. *Phytochemistry* 28 (7): 1913-1917.
- 67) <http://www.divineremedies.com/aujuna-capsules.htm>, downloaded on 17.02.2009.
- 68) Khanuja, S.P.S. Gupta, M.M. Srivastava, S.K., Kumar, T.R., Singh, D., Verma, S.C., Garg, A., Khan, M., Verma, R.K., Mishra, R.K. and Singh, S.C. 2007. *An improved process for the isolation of Arjunic acid from the bark of the tree Terminalia arjuna and the use of this compound in the treatment of cancer*. CSIR, New Delhi, India. (Pub No. WO2007060684, dt.31.05.2007; <http://v3.espacenet.com>, downloaded on 20.02.2009).
- 69) Tripathi, Y.B. 2008. *Polyherbal preparation for the prevention of atherosclerosis and hyperlipidemia*. Department of Biotechnology, New Delhi and Banaras Hindu University, Varanasi, India. ( Pat No.7,416,743, dt.26.08.2008; <http://patft.uspto.gov>, downloaded on 20.02.2009).
- 70) Singh, V.K. and Ali, Z.A. 1992. A contribution to the ethnopharmacological study of the Udaipur forests of Rajasthan, India. *Fitoterapia* 63 (2): 136-144.
- 71) Gupta, S., Yadava, J.N.S. and Tandon, J.S. 1993. Antisecretory (antidiarrhoeal) activity of Indian medicinal plants against *Escherichia coli* enterotoxin-induced secretion in rabbit and guinea pig ileal loop models. *Int. J. Pharmacog.* 31 (3): 198-204.
- 72) Pushpangadan, P., Rao, Ch.V., Rawat, A.K.S., Ojha, S.K. and Reddy, G.D. 2008. *Anti-allergic herbal formulation*. CSIR, New Delhi. (Pat no. 7344739 dt. 28.12.2004; <http://patft.uspto.gov> downloaded on 22.10.2008).
- 73) Solanki, R.S. 2003. *Herbal formulation*. Sahajanand Biotech Private Ltd, India. (Pub no. GB2378384 dt. 12.02.2003; <http://v3.espacenet.com>, downloaded on 23.10.2008).
- 74) Coverpage Source: [www.yosoy.comNew%20DataFun%20&%20PhotoTiger%20Face.jpg](http://www.yosoy.comNew%20DataFun%20&%20PhotoTiger%20Face.jpg)

Innovation



Investment

Enterprise



**Honey Bee Network**  
**SRISTI**  
P.O. Box : 15050, Ambawadi P.O.  
Ahmedabad - 380 015, Gujarat, India  
Phone: +91-79-27912792, 27913293  
e-mail: [honeybee@sristi.org](mailto:honeybee@sristi.org)  
[www.sristi.org/honeybee.html](http://www.sristi.org/honeybee.html)



**National Innovation Foundation**  
Bungalow 1, Satellite Complex  
Premchand Nagar Road  
Vastrapur  
Ahmedabad 380 015, Gujarat  
Telephone: +91-79-2673 2456/2095  
[www.nifindia.org](http://www.nifindia.org)