



National Innovation Foundation

CHHATTISGARH INNOVATES



Honey Bee Network

CHHATTISGARH INNOVATES



National Innovation Foundation

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CONTENTS

CHHATTISGARH INNOVATES

PART I INNOVATIONS FROM CHHATTISGARH	 11
PART II HERBAL PRACTICES & PRODUCTS	 19
PART III INNOVATIONS FOR CHHATTISGARH	 35

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 520 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 Chhattisgarh. 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 Chhattisgarh 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 Chhattisgarh 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

CHHATTISGARH 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
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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

¹ 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.

CHHATTISGARH 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 520 districts of the country.

NIF has filed 198 patents in India and seven in US and one PCT application. Out of these, 33 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

CHHATTISGARH 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). 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 Chhattisgarh. Tremendously rich knowledge of biodiversity and environment besides numerous grassroots innovations can be leveraged through the proposed collaboration.

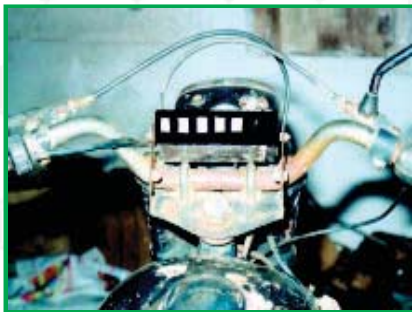


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“Innovation opens up new vistas of knowledge and new dimensions to our imagination to make everyday life more meaningful and richer in depth and content”.

- 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 CHHATTISGARH

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

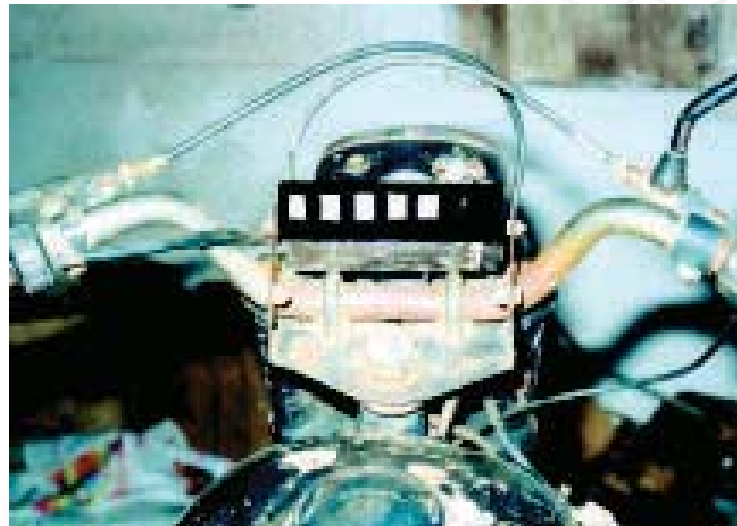




Tukaram Verma
Raipur

Automatic engine stopper for two wheelers

This innovation from Tukaram Verma (51), a motor mechanic, is an economical device that auto-cuts off the engine within 25-30 seconds in the neutral mode and is linked to various gear positions with a status indicator display. It leads to fuel saving and reduction in pollution at traffic intersections. He won a Consolation award in NIF's Third National Competition for Grassroots Innovation and Traditional Knowledge in 2005. NIF also supported him under the Micro Venture Innovation Fund and Value Addition, Research and Development Fund for product development.



Motek treadle press

Satish Deb (30) is a young man from a modest but tight-knit family. He learned about various aspects of the printing process from the treadle printing press kept at his home. In his efforts to save his family's printing press business from obsolescence, he has developed a technology that has the potential to rejuvenate treadle printing presses, which were losing ground to computers and new high quality printing technologies. Motek is a low cost, cutting-edge, up gradation tool for old letter press printing machines. The innovation lies in the unique combination of screen printing with letter press machines. The cost of the retrofitted Motek India Treadle press is much lower than that of buying a new offset printing press. Further, it prints over five times more efficiently than the treadle press alone.

He won a National award in NIF's Fourth National Competition for Grassroots Innovation and Traditional Knowledge in 2007. NIF also supported him under the Micro Venture Innovation Fund.



Satish Deb
Durg



Usman Shekhani
Kanker

Bamboo splints making machine

Usman Shekhani has developed a specialized bamboo cutter to cut bamboo strips into small pieces for preparing incense sticks (Agarbatti) and toothpicks. It consists of a wooden bracket, high speed steel blades, adjustable screws and spring loaded pushing roller. According to the Mechanical Engineering Department Laboratory of Rungta College of Engineering in Bhilai, this machine can help in converting 95 per cent of the bamboo into useful product. The quality of the output is good, the machine is portable, requires no electricity and maintenance cost is minimal. It also increases the efficiency of bamboo workers as 2000 sticks can be manufactured per hour using this device whereas previously this work was done manually. The cost of the cutter is Rs. 450 as compared to the cost of motorised bamboo cutting machines available in the market which is Rs.70, 000. This device can provide gainful employment to lakhs of rural people in the cottage industry sector. Usman Shekhani has sold over 2000 pieces of his machine and trained over 2000 people in using it . He has received a very good response

especially in Madhya Pradesh and Chhattisgarh, which have a flourishing agarbatti industry.



He won a Consolation award in NIF's Third National Competition for Grassroots Innovation and Traditional Knowledge in 2005. NIF also supported him under the Micro Venture Innovation Fund and filed a patent in his name.

Carbon coated board for classrooms

Shantam is a young student of class seven. He has given an idea of carbon coated board for class room teaching, which will be dust free, have more writing space and be easy to maintain. A roll over film will be used to cover the board. All writing work will be done on this film using a bold point pen. The advantages are that the used film can be carried, cleaned and reused or even rolled up and stored for future use.



Shantam Gupta
Durg

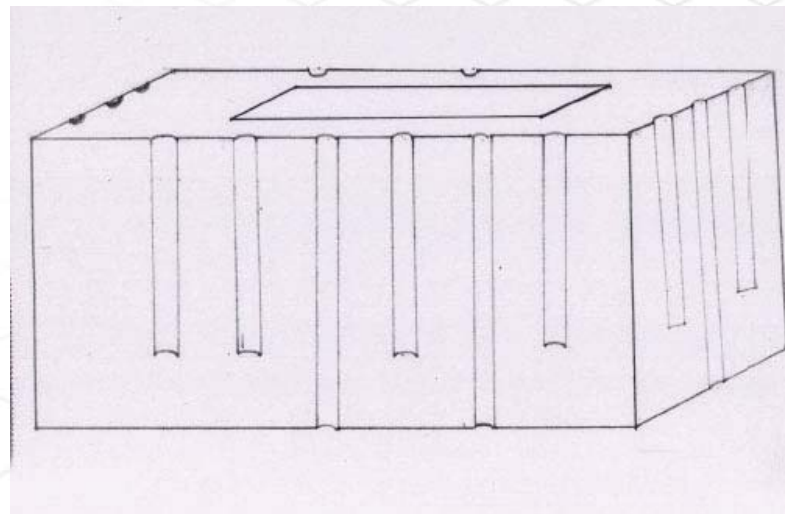
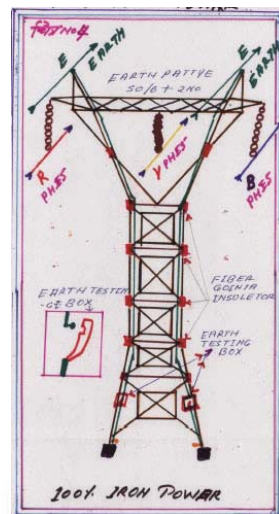


Pradip Walter*
Korba

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

New brick design & other ideas

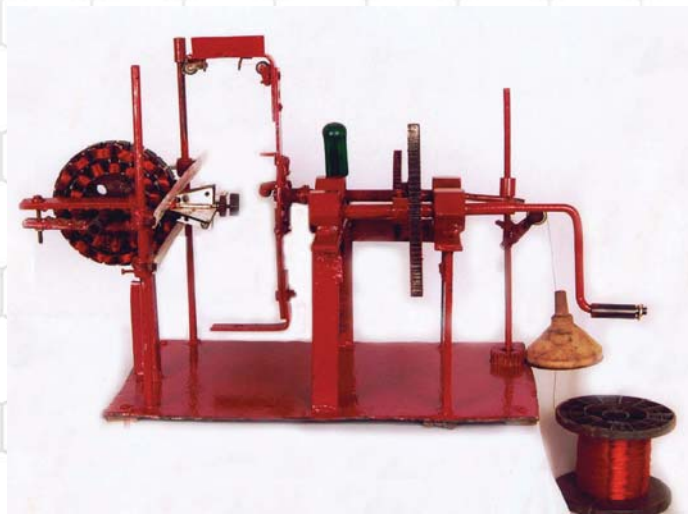
Pradip Walter is a restless innovator who keeps coming up with one idea or the other to solve various problems. He has designed a brick wherein he has made a few longitudinal semi-cylindrical depressions on all sides of the brick. The innovator claims that this, apart from saving mud, helps in saving energy as the bricks get baked early and it also increases the grip with the cementing material. He also has ideas to modify the existing toilet system in railways to make them more hygienic, help save transmission losses in high tension electricity lines, control mosquito menace, etc.



Ceiling fan winding machine

While winding ceiling fans manually, Bhojraj, an electric mechanic, realised that almost five hours were used in the task, which otherwise could have been used in other income generating tasks. The innovator mentions that the commercially available machines for the task are costly and unaffordable for average electricians, who then have to compulsorily do the winding manually. This hand operated machine, may prove very helpful to the electricians at a fraction of the cost of other commercial machines.

Bhojraj Murari
Durg





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; 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. (Chirchiri)

NIF Database

Uses from Chhattisgarh

Tuberculosis

Take the plant powder (5g) orally along with honey
- Sukhpati Netam, Kanker, Chhattisgarh

Poisonous bite

Take the root powder orally with pinch of sugar
- Netaram Sahu, Durg, Chhattisgarh

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

Poisonous bite

Take the fresh juice of the branch
- Hemlata Balutia, Nainital, Uttarakhand

Abscess

Apply the root paste topically
- Ravi Uraav, Hazaribag, Jharkhand

Uses in Classical Codified Literature

Dried aerial parts are taken orally in the case of diabetes¹; powder made from the dried plant is given orally to treat whooping cough²; decoction of the plant is used as laxative³ and is also applied externally on boils and pimples³.

Product 'Cystone'⁴ 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 laryngopharyngitis⁵, and bronchial asthma⁶.



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

Uses of *Annona squamosa* L. (Sitaphal)

NIF Database

Use from Chhattisgarh

Head lice

Apply the seed paste on the scalp

- *Gaudavari Dhruv, Dhamtari, Chhattisgarh*

Uses from other states

Dandruff

Apply the leaf paste on the scalp

- *Jitendriya Panigrahi, Balugaon, Orissa*

Hair care

Apply the leaf paste on the hair

- *Sana Parvin, Mandu, Jharkhand*

Head lice

Apply the seed powder on the scalp

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

Cough

Smoulder the powder of annona and date palm seeds to inhale the smoke for relief

- *Ramdas Ghanshyamdas Patel, Nasik, Maharashtra*

Diabetes

Take four tea spoonfuls of the fruit powder orally every morning on an empty stomach

- *Shantanu Gupta, Kota, Rajasthan*

Abscess/boils

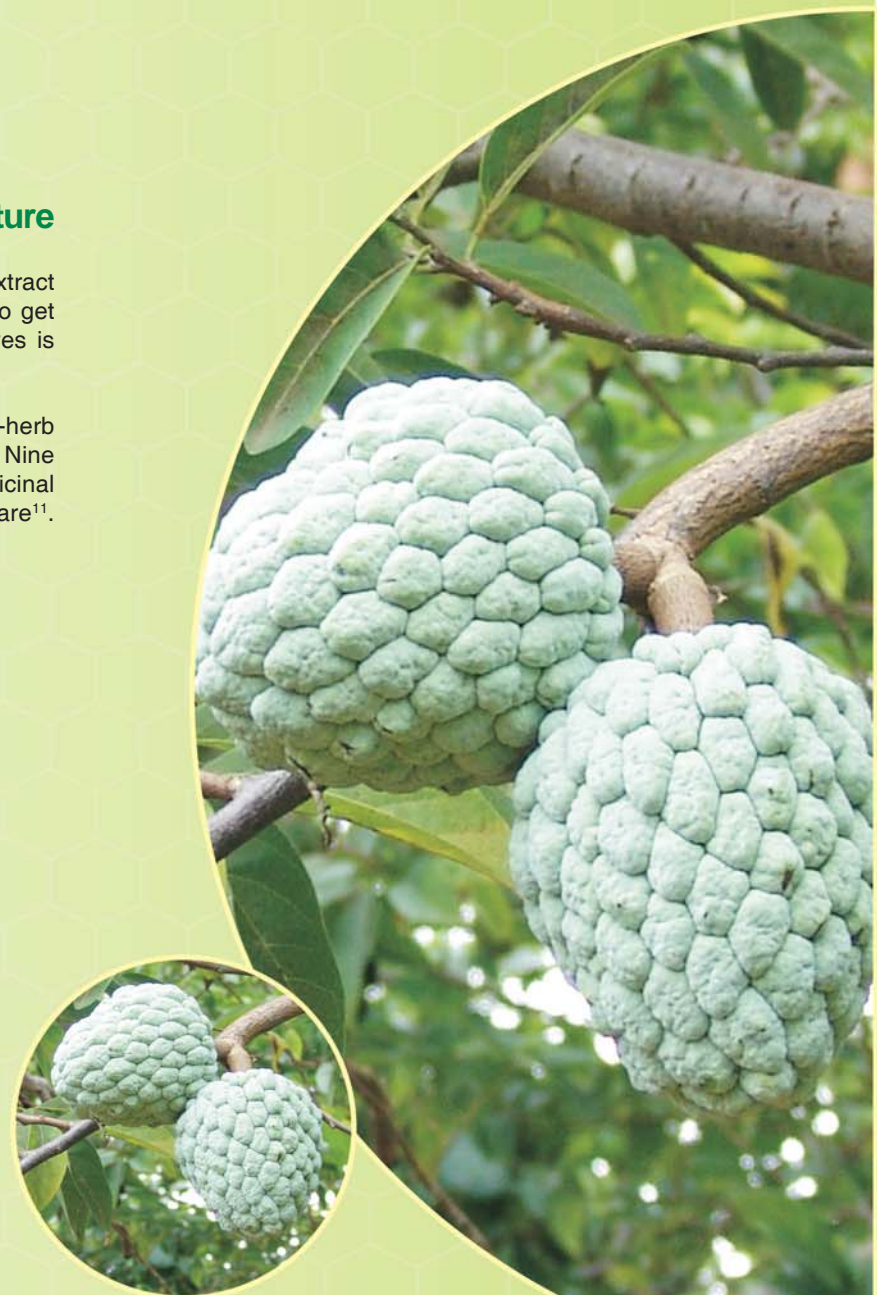
Apply the fruit paste over the affected part

- *Naganath Durga Chogule, Sholapur, Maharashtra*

Uses in Classical Codified Literature

Ripe fruit is considered as an anthelmintic⁷; extract from leaves and fruit is administered orally to get rid of rheumatic pain⁸ and the paste of leaves is applied on the head to kill head lice².

Product 'LICEX Headlice Expeller'⁹ is a multi-herb formulation that removes headlice and nits. Nine patents have been found on its various medicinal uses such as an antiretroviral¹⁰ and for scalp care¹¹.



Source: <http://striweb.si.edu/ctfs/webatlas/plant.photos/annosq.hofr1.jpg>

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

NIF Database

Use from Chhattisgarh

Veterinary practice

Cuts and wound

Feed the bark juice to the animal for quick healing
- *Sevaram Bhaskar, Dhamtari, Chhattisgarh*

Uses from other states

Hair lice

Apply the leaf juice on the scalp
- *P. D. Walikar, Bagalkot, Karnataka*

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*

Uses in Classical Codified Literature

Bark is used as poultice for pimples¹²; bark juice is given orally to cure intestinal worms¹³. 'Lukol'¹⁴ has a stimulatory action on the endometrium and improves uterine circulation. 'Hair Loss Cream'¹⁴ improves tensile strength of hair and increases hair density. Ten patents have been found on its medicinal uses for bone disorders¹⁵, skin care¹⁶ etc.



Source: http://www.plantcreations.com/images/Butea_monosperma_amazing.jpg

Uses of *Carica papaya* L. (Papita)

NIF Database

Use from Chhattisgarh

Throat pain

Put the fruit latex (3 drops) in a glass of water, leave for sometime and gargle for immediate relief
- *Devesh Kumar Bhandavi, Dhamtari, Chhattisgarh*

Uses from other states

Lactagogue

Eat the ripe fruit
- *Kalia Behera, Bargarh, Orissa*

Cuts & wounds

Apply the leaf paste topically
- *Jongam Ngemu, Papum Pare, Arunachal Pradesh*

Jaundice

Take the root decoction thrice a day along with some other herbs
- *Yanueg Jamoh Lego, East Siang, Arunachal Pradesh*

Toothache

Keep cotton dipped in the latex of the stem on the aching tooth
- *Mangeram Jani, Hissar, Haryana*

Intestinal worms

Take fresh latex mixed with honey orally
- *Prabhat Kumar Pandey, East Champaran, Bihar*

Constipation

Take fruit to get relief
- *Leelamani Devarajan, Idukki, Kerala*

Ringworm

Apply the milky latex on the affected area
- *Mukesh Kumar, East Champaran, Bihar*

Apply small fruit pieces topically

- *Marykutty Thomas, Idukki, Kerala*

Kidney stone

Take the root juice orally
- *Sandhya Suman, Sitamarhi, Bihar*

Hydrocele

Make a paste of latex and tender fruit. Give one teaspoon thrice a day till the ailment cures.
- *Dimbeswar Gogoi, Sibsagar, Assam*

Veterinary practice

Lactagogue

Feed fruits daily to enhance milk production
- *Manoj Kumar, Madhubani, Bihar*

Uses in Classical Codified Literature

Decoction of the flower is used as cardiogenic¹⁷; bark powder is applied externally on wounds¹⁸; decoction of the bark is given orally to get rid of intestinal worms¹⁹; beverage of the fruit is taken orally to cure diarrhoea²⁰. Natural moisturizers and creams²¹ are prepared from *Carica* in combination with other plants. Thirty patents were found on its medicinal uses as an antiallergic²² and for prevention of cancer²³.



Source: http://utenti.lycos.it/piantetropicali/Carica_papaya.jpg

Uses of *Dalbergia sissoo* Roxb. ex DC. (Shisam)

NIF database

Uses from Chhattisgarh

Stomachache

Take two spoonful of the fresh leaf juice orally along with a pinch of salt or sugar once a day
- *Pancham Kaivat, Bilaspur, Chhattisgarh*

General debility

Take the fresh leaf juice orally along with sugar
- *Pancham Kaivat, Bilaspur, Chhattisgarh*

Uses from other states

Abscess

Apply the leaf paste topically
- *Neha Kumari, East Champaran, Bihar*

Dysentery

Take the leaf juice orally
- *Avinash Kumar, Sitamarhi, Bihar*

Leucorrhoea

Take four spoonful of fresh leaf juice orally with buttermilk
- *Jagjeet Bahadur, Sitapur, Uttar Pradesh*

Itching

Apply the seed oil topically
- *Lalit kumar, Bulandshahar, Uttar Pradesh*

Uses in Classical Codified Literature

Seed oil is used to get relief from rheumatic pain²⁴; leaf paste is applied on the forehead of the patients suffering from sunstroke²⁴; and decoction of dried wood bark is given orally to get rid of intestinal worms²⁵. Product 'Jiva Sattva Skin Health Care Pack'²⁶ is sold for skin ailments. Three patents have been found on its medicinal applications mainly on gastrointestinal disorders²⁷ and diabetes²⁸.



Uses of *Eucalyptus globulus* Labil. (Nilgiri)

NIF Database

Uses from Chhattisgarh

Headache

Apply the fruit paste on forehead

- *Vidyasagar, Dhamtari, Chhattisgarh*

Stomachache

Take the fruit juice orally

- *Vidyasagar, Dhamtari, Chhattisgarh*

Constipation

Extract juice from soaked fruit and take orally

- *Vidyasagar, Dhamtari, Chhattisgarh*

Uses from other states

Tooth cavity

Gargle the decoction of leaves

- *Rajdip Kaur, Patiwala, Punjab*

Stomach disorders

Soak fruits in a glass of water overnight. Next morning crush it with hands and take the filtered solution orally

- *Maksudh Ansari, Giridih, Jharkhand*

Wound

Apply the oil topically

- *Taiyaz Ahmad, East Champaran, Bihar*

Uses in Classical Codified Literature

Apply leaves' paste on forehead to get rid from head ache²⁹; use oil to cure skin diseases and to treat burns²⁹; apply leaf decoction to get rid of body ache and malaria¹⁸.

'Eucalyptus leaf aromatic water'³⁰ is excellent antiseptic and is used as inhalation for colds, sinusitis and general catarrh. 'Muscle and joint rub'¹⁴ cream is prepared in combination of other ingredients for relieving pain in muscle and joints. Herbal Trim Skin Treatment³¹ provides essential moisture benefits to smooth and soften chafed, chapped, and dry skin. Forty patents are available on its medicinal properties like for ointment for burn³², anti-inflammatory properties³³, etc.



Source: (http://upload.wikimedia.org/wikipedia/commons/5/5e/Eucalyptus_globulus_flowers_leaves.jpg)

Uses of *Nyctanthes arbor-tristis* L. (Harshingar)

NIF Database

Use from Chhattisgarh

Fracture

Apply the leaf and bark paste over the fractured area and wrap tightly with a cloth
- Ramsharan Dhruv, Dhamtari, Chhattisgarh

Pain

Apply the leaf paste on fractured part to alleviate pain
- Ramsharan Dhruv, Dhamtari, Chhattisgarh

Uses from other states

Hair fall

Apply the paste of seeds on the scalp
- Rani B. Bhagat, Pune, Maharashtra

Cough/cold

Take the paste prepared from three leaves and black pepper orally along with water
- Ashok Kumar Yadav, East Champaran, Bihar

Malaria

Take the leaf juice orally along with honey
- Prabati Kalita, Kamrup, Assam

Intestinal worms

Take two spoonfuls of the flower juice with a pinch of salt orally for two days
- Manoj Kalita, Kamrup, Assam

Diabetes

Take the decoction of the leaves orally for 40 days
- Shama Pravin, Gopalganj, Bihar

Wound

Apply the leaf paste topically
- Ranjeet Kumar, Sheohar, Bihar

Fever

Take the leaf decoction orally
- R.K. Bheirosana Singh, Bishnupur, Manipur

Uses in Classical Codified Literature

Dried fruits are taken orally to get relief from cough³⁴; decoction of dried flower is given with jaggery as an anti-fertility agent in females³⁵; leaf juice is applied externally on ringworm and other skin diseases³⁵. 'Lupin'³⁶, is a medicine used for pain and inflammation associated with musculoskeletal and joint disorders. Six patents have been found on its medicinal uses such as in treating Leishmaniasis³⁷ and also for its natural property as a dye³⁸.



Source: <http://prathom.swu.ac.th/panmai/pic/7-10110-002-110.JPG>

Uses of *Phyllanthus emblica* L. (Amla)

NIF Database

Uses from Chhattisgarh

Jaundice

Take the plant powder (5g) along with milk
- Kiran Batti, Dhamtari, Chhattisgarh

Wound

Apply the leaf paste topically
- Sevaram Bhaskar, Dhamtari, Chhattisgarh

Uses from other states

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 amlaki, tapioca and cumin (in equal proportions) orally to cure the disorder
- Guna Ram Kanikar, Golaghat, Assam

Diabetes

Take two spoonfuls of the powder of amlaki, *Terminalia chebula* Retz., *Terminalia bellirica* Roxb. (in equal proportions) orally
- Pritam Chand, Kangra, Himachal Pradesh

Jaundice

Take one spoonful of the powder of amlaki fruit, ginger, black pepper and turmeric (in equal proportions) orally along with honey
- Nagarmal Bagaria, Nagor, Rajasthan

Pimples

Apply the leaf paste topically
- Ratnaprabha Barik, Kendrapada, Orissa

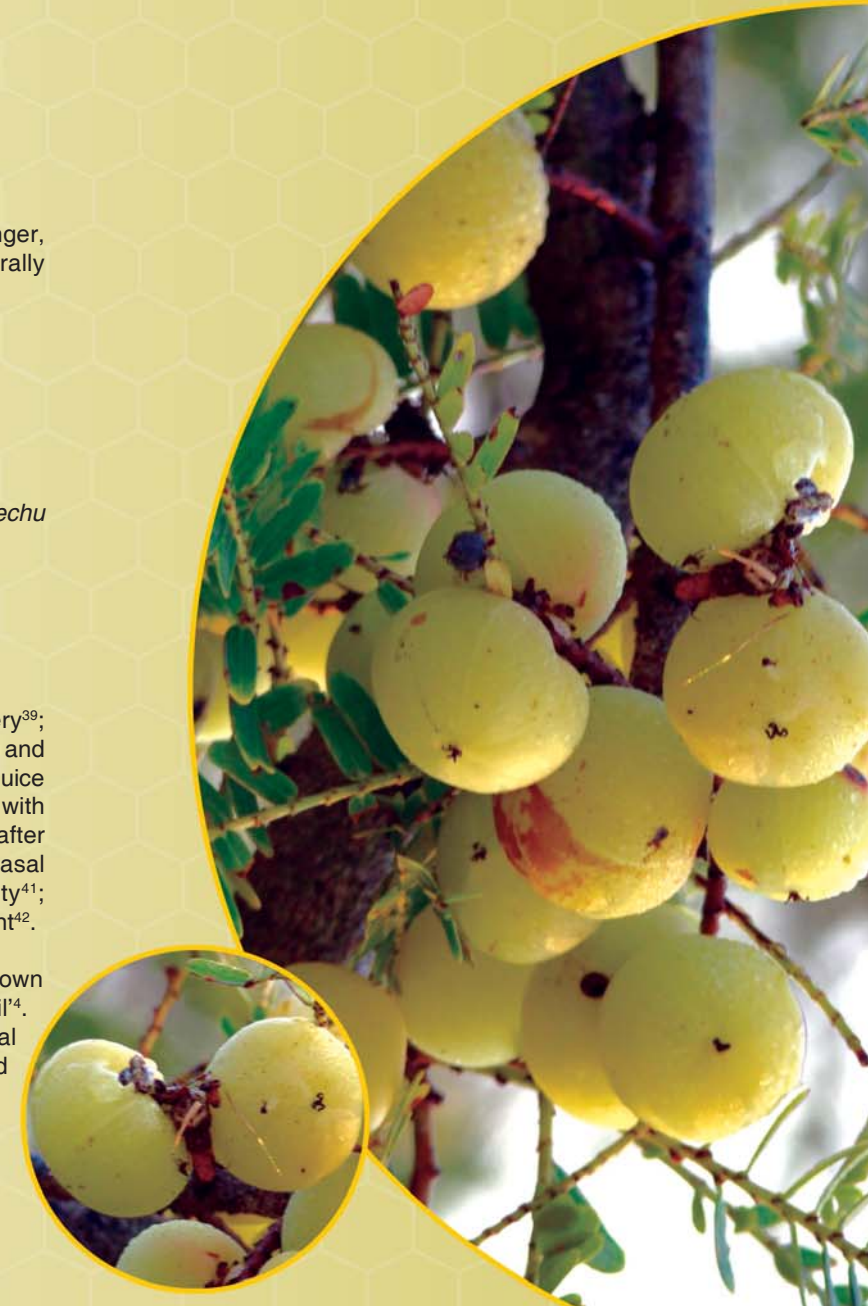
Poisonous bite

Chew 3-4 root pieces along with a leaf of *Areca catechu* L. to get relief from the effect of poisonous bites
- Anna Gangavarn, Osmanabad, Maharashtra

Uses in Classical Codified Literature

Bark and fruits are used in diarrhoea and dysentery³⁹; fresh juice of the fruit, mixed with pure cow's butter and honey, is administered to cure obstinate hiccough³⁹; juice relieves pain in urine trouble³⁹; pulp (2-3g) is eaten with warm milk to get rid of headache⁴⁰; powder of seeds after mixing with ghee is applied on the head to stop nasal bleeding²; fruits are taken orally to reduce acidity⁴¹; decoction of the fruit is taken to increase blood count⁴².

Phyllanthus is one of the main ingredients of well known medicines 'Triphala, Chavanprash and Amla hair oil'⁴. Seventy six patents have been found on its medicinal uses such as for diabetes⁴³, liver disorders and immune deficiencies⁴⁴.



Uses of *Sphaeranthus indicus* L. (Gorakhmundi)

NIF database

Use from Chhattisgarh

Flatulence

Prepare tablets from the plant powder mixed with jaggery.
Take one tablet twice daily
- Pusaram Sahoo, Durg, Chhattisgarh

Uses from other states

Headache

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

Stomachache

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

Uses in Classical & Codified literature

Extract of the dried aerial parts is taken to get rid of indigestion⁴⁵; juice of the fresh leaves is mixed with little amount of milk and sugar and consumed to combat cough⁴⁵; and the plant acts as a diuretic⁴⁶. Product 'Diabecon'⁴⁴ minimizes long-term diabetic complications. 'Geriforte'⁴⁴ facilitates respiratory functions, and assists cardiovascular functions. Six patents have been found on its various medicinal applications mainly on inflammatory disorders⁴⁷ and cancer⁴⁸.



Source: http://static.flickr.com/51/120815845_f30c6c611d.jpg

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

NIF database

Uses from Chhattisgarh

High blood pressure

Take one cup of the decoction of bark on an empty stomach for 21 days

- Pusaram Sahoo, Durg, Chhattisgarh

Anaemia

Take the decoction of bark, leaf and fruit orally

- Gobardhan Netam, Dhamtari, Chhattisgarh

Uses from other states

Cardiac disorder

Take one cup of the tea made from bark powder on an empty stomach

- Mahesh Bijarania, 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

Bodyache

Chew the tender bark

- Mohammad Soheb, Gopalganj, Bihar

Uses in Classical & Codified Literature

Decoction of the bark is administered orally to get relief from chest pain⁴⁹; bark powder is taken to combat diabetes⁵⁰; and the paste of bark along with leaves of night jasmine is applied externally to cure injuries³⁴.

Product 'Abana'⁴ regulates serum lipids by lowering the cholesterol and thus improves the contractility of the heart. 'Arjuna'⁵¹ promotes effective cardiac functioning and regulates blood pressure. Seven patents have been found on its medicinal uses mainly on cancer⁵² and hyperlipidemia⁵³.



Source: http://farm1.static.flickr.com/201/517713786_6e7d8014d6.jpg?v=0

Uses of *Ziziphus mauritiana* Lamk. (Ber)

NIF Database

Use from Chhatisgarh

Hair fall

Apply the paste of leaves of ber, amla (*Phyllanthus emblica* L.) and neem (*Azadirachta indica* A. Juss.) the scalp

- Tarini Sahu, Dhamtari, Chhattisgarh

Uses from other states

Indigestion

Mix the fruit pulp of *Ziziphus* with one year old vinegar and add some black salt to it. Take the formulation for fifteen days on an empty stomach

- Jivan Nath Bichchunath, Udham Singh Nagar, Uttarakhand

Take one spoonful of the root paste orally

- Madhusuda Munda, Keonjhar, Orissa

Hair care

Boil the fresh leaves (100-150g) in one litre of water.

Wash the hair with cooled decoction.

- Baba Anantanand, Hissar, Haryana

Acne

Apply the leaf paste topically

- Ajay Kumar Jena, Balasore, Orissa

Rheumatism

Apply the leaf and root paste (along with the roots of *Cassia auriculata* L.) on the aching part

- Jivanbhai Bhanjibhai Jagarana, Bhabnagar, Gujarat

Veterinary practice

Lactagogue

Feed the cattle with dry leaf powder mixed in fodder

- Baba Anantanand, Hissar, Haryana

Uses in Classical Codified Literature

Pounded leaves are applied on boils⁵⁴; powdered leaves are taken to reduce blood sugar²; decoction of the plant is administered orally as a diuretic⁵⁵; and powder of dried fruit is given orally with water to cure diarrhoea⁵⁶.

'Dhanwantharam oil'⁵⁷ is prepared from *Ziziphus* along with other plants used for rejuvenating body and skin care. More than ten patents have been found on its medicinal applications mainly for treating cancer and tumorous growth⁵⁸.

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). 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 Rajnandgaon district)

PART III

INNOVATIONS for CHHATTISGARH

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





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.



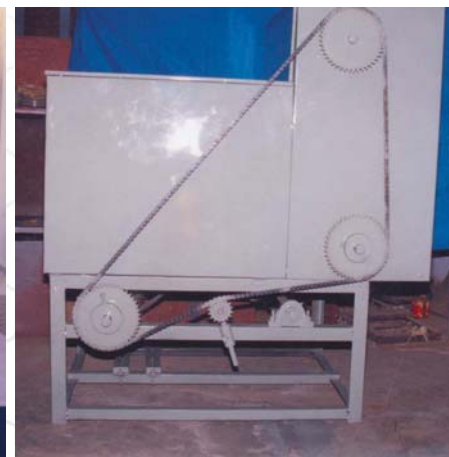
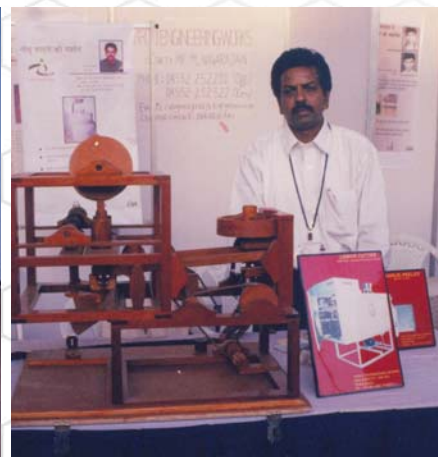
Garlic peeling and lemon cutting machine

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

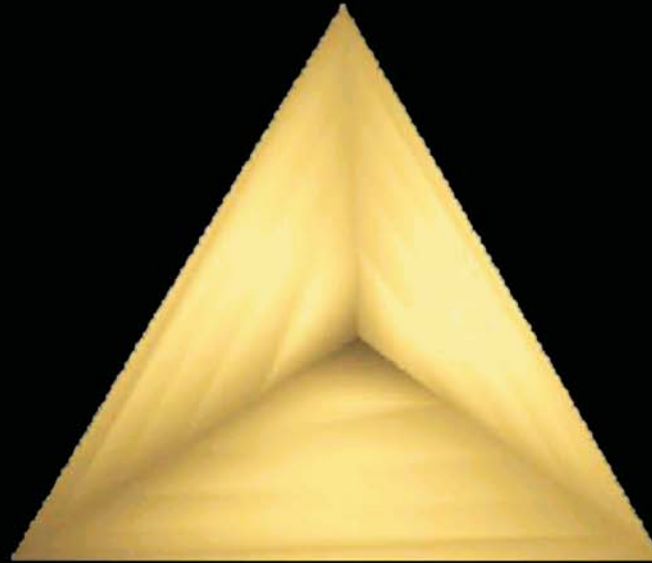


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