National Innovation Foundation

MEGHALAYA INNOVATES

Honey Bee Network

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National Innovation Foundation

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PREFACE

National Innovation Foundation 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 of 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, innovations and traditional knowledge for/ from Meghalaya. I am conscious of its limitation in terms of coverage and outreach. But if we could uncover so many 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 two parts. Few Innovation and selected examples of herbal traditional knowledge from Meghalaya are given in part one. The innovations from other parts of the country suitable for the development of Meghalaya are given in part two.

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 may not have been educated much, may in fact be economically

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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 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 each 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.

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Building a Bridge with Grassroots Innovators in Informal Sector

To make 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 his 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, NIF (National Innovation Foundation) 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.

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.

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 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.

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 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 from over 520 districts of the country.

NIF has filed 212 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 the 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 field of agriculture, education, industry, rural development, women and child care, forestry, etc. There can be a very fruitful partnership between NIF as a source of innovative ideas and technologies and state

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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 to help 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 of the school children.

d. Demonstrations and trials can be organized at various regional research stations, KVKs (Krishi Vigyan Kendras) so as to create awareness about the creative potential of common people.

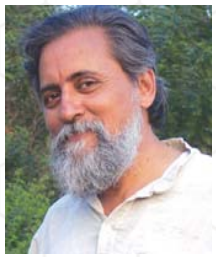
e. The research institutions can be mandated to add value to the knowledge of innovative people and help in protecting their knowledge rights.

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 a 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 government of Meghalaya state. Tremendously rich knowledge of biodiversity and environment can be leveraged through the proposed association.



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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. A.P.J. Abdul Kalam

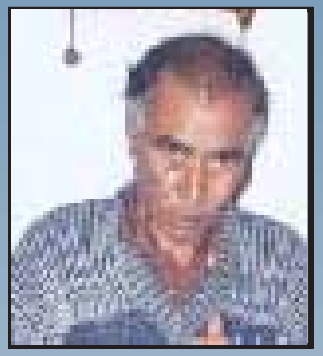
“The purpose of innovation is to create a new value for an individual, team, organization or for society at large”.

- Dr. R.A. Mashelkar

PART I

INNOVATIONS & HERBAL PRACTICES FROM MEGHALAYA

This section contains grassroots innovations and herbal practices originating from the rural/urban areas of Meghalaya



Kambel Chulai
Jaintia Hills

Low-cost, environment-friendly crematorium: technology & tradition

Kambel Chulai, is a Class III dropout from Jowai in Meghalaya. He had to join an automobile workshop as an apprentice in his early teens due to financial constraints and since then has moonlighted in many roles.

In 1988-89, Kambel first observed that the traditional method of cremation was highly polluting, time consuming, very costly and also difficult during the rainy season. In order to eliminate these problems he started working on low cost crematorium. In 1995 he developed a conceptual model and in 1999 the prototype of his innovation was developed with the help of the Sein Raij (the local social and religious organization) which initially rejected it as they did not want technology to take over tradition.

The low cost environment friendly crematorium is a long structure, open at one end and connected to a 36 feet high chimney at the other end. The chimney has a cover that can be operated from outside for controlling the intensity of the flames inside the crematorium.

Only Rs. 200 worth of firewood is used in this as against Rs. 3000 worth of firewood utilized in the old cremation practice. Cremation time has been reduced to less than 1 ½ hours as compared to 8-9 hours in the old traditional cremation method. Smoke and fume emitted during cremation has been reduced by 90% in his new crematorium compared with the amount emitted in the old traditional method. This low cost environmentally friendly crematorium is a boon to the cremation practice of his fellow tribesmen as it has eliminated the resources required in the process by more than 80%.

The first cremation took place on June 21, 2003, exactly a month following the first crematorium inauguration. Now, almost 80 per cent of cremations take place in this structure. The government of Meghalaya has woken up to the positive side of this invention and is helping the Sein Reij with financial aid to build the second crematorium in Jowai. He won the award in NIF's Third National Competition for Grassroots Innovations and Traditional Knowledge Practices in 2005.

Paddy winnower

War
Ribhoi

To thrash paddy and husk it to separate grain and husk. Mr. War has energized the age old practice of making a triangle winnower using a bamboo pole with fixed wooden planks in between the triangle. One person stands on the top while another stands on the middle of the triangle. A third person stands on the floor below. The person standing on the floor gives the basket full of husk to the person who stands in the middle of the triangle, and then the second person passes it to the person standing on top of the triangle. The person standing on top then pours down the husk towards the floor. While falling the husk gets blown away and the grain falls down and is packed in the gunny bags. This process continues till the paddy is cleaned.

03

Control of rice bug attack on paddy

K. D. Kharkongor
Ri-Bhoi

K. D. Kharkongor (50years), is an assistant agronomist in the District Agriculture Office, Ri- Bhoi district, Meghalya. Rice bug or *Gundhi bug* is a serious insect on standing paddy crop both in upland and lowland condition. The insect cause damage at milky stage of the crop and the damage extend upto 70-80% of the crop yield.

To control the problem, farmers have been using pheromone trap and other traditional methods to repel insects using plant and non-plant materials having false odour. But Kharkongor is combined the modern technology of using baffle trap with dead crabs to attract rice bugs instead of 'Pheromone lures'. The bugs tend to congregate to suck the fluid and the soft rotten flesh. These bugs are then collected in a container and are destroyed before they start migrating back to the rice plants. Using this technique, an average of 170-180 bugs per trap could be eliminated. He won the state award in NIF's Second National Competition for Grassroots Innovations and Traditional Knowledge Practices in 2002

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

Uses of *Adhatoda vasica* (L.) Nees (Toh tang)

NIF Database

Source: NIF database

Use from Meghalaya

Cough and cold

Take a spoonful leaf powder orally
- *Guidingstar Tham, East Khasi Hills, Meghalaya*

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*

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

Uses in Classical Codified Literature

Decoction of the plant is taken orally to cure asthma[1]; leaves (500g) are decocted in 5 litres of water until a dark brown mass is obtained and two spoonfuls are taken with honey thrice a day for 2-4 days to cure fever[2]; rheumatic patients should warm the leaves and apply on the body[3]. Product 'Menstri Care'[4] prepared from the plant is an effective medicine for women's health problems. 'Diakof'[5] a herbal medicine uses *Adhatoda* along with other plants for treating cough. Ten patents have been found on its medicinal applications mainly for cough[6] and asthma[7].

Uses of *Areca catechu* L (Kwai)

NIF Database

Use from Meghalaya

Stomach disorder

Chew *pan* along with small nut and ginger for immediate relief
- *Paila Decrese Warbah, Ribhoi, Meghalaya*

Uses from other states

Dysentery
Take the root decoction orally
- *Purna Kanta Shyam, Sibsagar, Assam*

Corn
Mix husk ash with mustard oil. Apply the paste topically
- *Bhula Hira, Sibsagar, Assam*

Gray hair
Apply the leaf paste on the scalp
- *Leelamma Kuttappan, Idukki, Kerala*

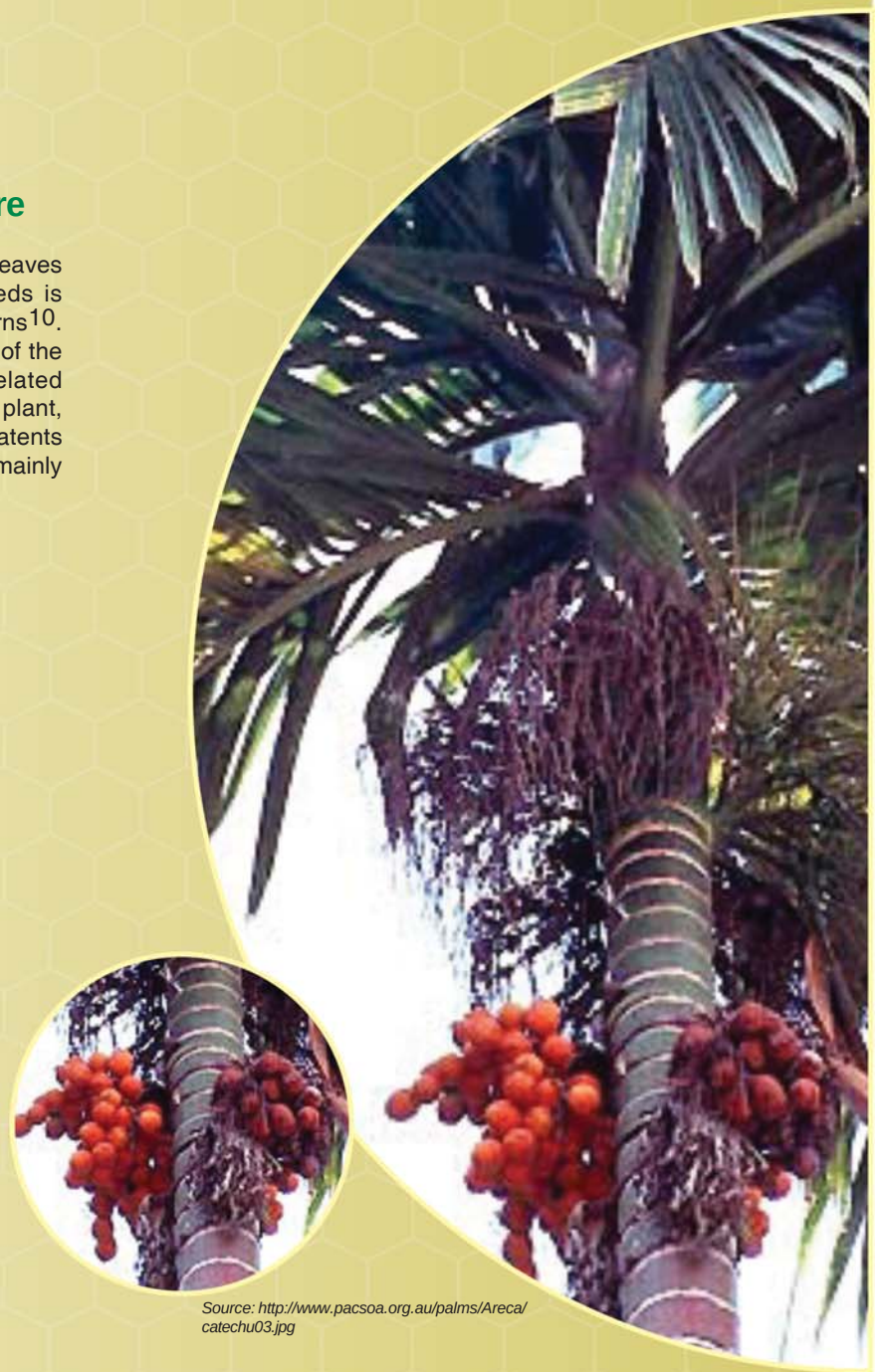
Migraine
Gurgle with fruit decoction to get relief from pain
- *Naganath Durga Chogule, Sholapur, Maharashtra*

Dental care
Brush the teeth with seed ash
- *Amit Kumar, Gopalganj, Bihar*

Burn
Apply the paste of raw seeds topically
- *Bhoothathan Kanni, Tirunelveli, Tamil Nadu*

Uses in Classical Codified Literature

Dried bark powder is taken orally to cure asthma[8]; leaves are used as antipyretic[9]; powder of tender seeds is boiled in coconut oil and applied in case of burns[10]. Product 'Lukol DS'[5] tablet contains *Areca* as one of the ingredients and is useful in leucorrhoea and related symptoms. 'Himplasia'[5], a product made from this plant, is useful for treating prostate disorders. Seven patents have been found on the medicinal uses of the plant mainly as an antidiabetic[11] and as an antiviral[12].



Source: http://www.pacsoa.org.au/palms/Areca/catechu03.jpg

Source: http://www.fine-arts.org/about/images/Bombax_ceiba_Orange_Glow_copy.jpg

Uses of *Bombax ceiba* L. (Symbai kynphad simoluk)

NIF Database

Use from Meghalaya

Take seed powder orally
- *Bioda B. Shullai, Ribhoi, Meghalaya*

Uses from other states

Itching in animals
Take the bark paste twice a day
- *Umesh Rathore, Pithoragarh, Uttarakhand*

Wound
Apply the fresh bark paste topically
- *Pravin Kumar Sharma, East Champaran, Bihar*

Diarrhoea
Take a spoonful of leaf juice along with some sugar candy for four days
- *Neha Kumari, East Champaran, Bihar*

Gynaecological disorder
Take the gum powder (5g) with water for five days
- *Jugeshwar Ram, Hazaribag, Jharkhand*

Constipation
Take the bark powder (3g), coriander powder and jaggery with water
- *Devaram, Sirohi, Rajasthan*

Piles
Take the root paste (10g) with water for seven days
- *Antaryami Pradhan, Angul, Orissa*

Uses in Classical Codified Literature

Decoction of the bark is given orally to combat fever[13] decoction of the heartwood is given for controlling diabetes[14]; and bark juice is administered to reduce stomachache[15]. Product 'Acne-n-Pimple Cream'[16] is prepared from *Bombax* along with other plants to treat pimples and skin eruptions. 'Evecare'[5], a multi herb product made from this plant, has a regularizing influence on the menstrual cycle. Eight patents have been found on the medicinal applications of *Bombax* mainly for skincare[17], AIDS[18] etc.

Uses of *Camellia sinensis* (L.) Kuntze (Chai)

NIF Database

Use from Meghalaya

Dysentery

Take equal amount of leaves of *Camellia*, fruit of Indian gooseberry and bulblet of garlic, boil in water. Take decoction orally
- *Bartyl Suchiang, Jaintia Hills, Meghalaya*

Uses from other states

Ringworm
Crush the leaves of *Camellia sinensis*, *Randia* sp., *Lawsonia inermis* L., and *Leucas* sp. along with a garlic bulb and extract the juice. Apply the juice on the affected body part.
- *Dimbeswar Gogoi, Sibsagar, Assam*

Herbal hair oil
Put 50g each of fine tea powder, black sesame seeds and black cumin in a vessel containing 600g coconut oil, 100g castor oil and 100g olive oil and mix it well. Apply the mixture on the hair third day onwards.
- *Valsamma Thomas, Idukki, Kerala*

Bleeding dysentery
Take tea powder with some sugar orally
- *Umashankar Baitha, East Champaran, Bihar*

Fever
Prepare the decoction of tea, *ajwain*, black pepper, and ginger. Take it once a day
- *Madhudevi, Sikar, Rajsthan*

Uses in Classical Codified Literature

Root extract has antineoplastic[19] and anti-tumor properties[20]; hot water extracts show anti ulce21, anti-diarrhoeal properties[22]; and green and black tea has antioxidant property[23].Green tea[5] has antioxidant and immuno-modulating properties, which strengthen body's immunity and delay the natural ageing process. One hundred and twenty three patents have been found on its medicinal applications like for treating diabetes[24].

Source: camellia FLOWER: http://upload.wikimedia.org/wikipedia/commons/7/73/Camellia_sinensis_flower.jpg

Uses of Carica papaya L. (Sla sohkynphor)

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

NIF Database

Use from Meghalaya

Weakness

Eat curry from unripe fruit
- *Kromlinda Phawa, Ribhoi, Meghalaya*

Uses from other states

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

Cuts &wounds
Apply 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*

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*

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*

Uses in Classical Codified Literature

Decoction of the flower is used as cardiotonic[25]; bark powder is applied externally on wounds[26]; decoction of the bark is given orally to get rid of intestinal worms[27]; beverage of the fruit is taken orally to cure diarrhoea[28]. Natural moisturizers and creams[29] are prepared from *Carica* in combination with other plants. Thirty patents were found on its medicinal uses as an antiallergic[30] and for prevention of cancer[31].

Uses of *Centella asiatica* (L.) Urban (Khlieng syiar)

NIF Database

Use from Meghalaya

Diarrhoea

Boil whole plant in water. Filter the decoction and take orally
- *Lazer Dohling, Ribhoi, Meghalaya*

Uses from other states

Mental depression
Whole plant mixed with stem of *theisawntlung* (*Tinospora cordifolia* (L.) Merr.) and boil with water. One cup decoction is given orally
- *Community Knowledge, Aizawl, Mizoram*

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

Toothache
Make a paste of *brahmi* leaves, garlic cloves and banana roots. Apply topically and leave for one hour.
- *Anil Gogoi, Sibasagar, Assam*

Sinusitis
Grind leaves (10g) along with one black pepper and extract the juice. Put three drops into the nostrils. Continue the treatment for three days
- *Batchu Murmur, Kokrajhar, Assam*

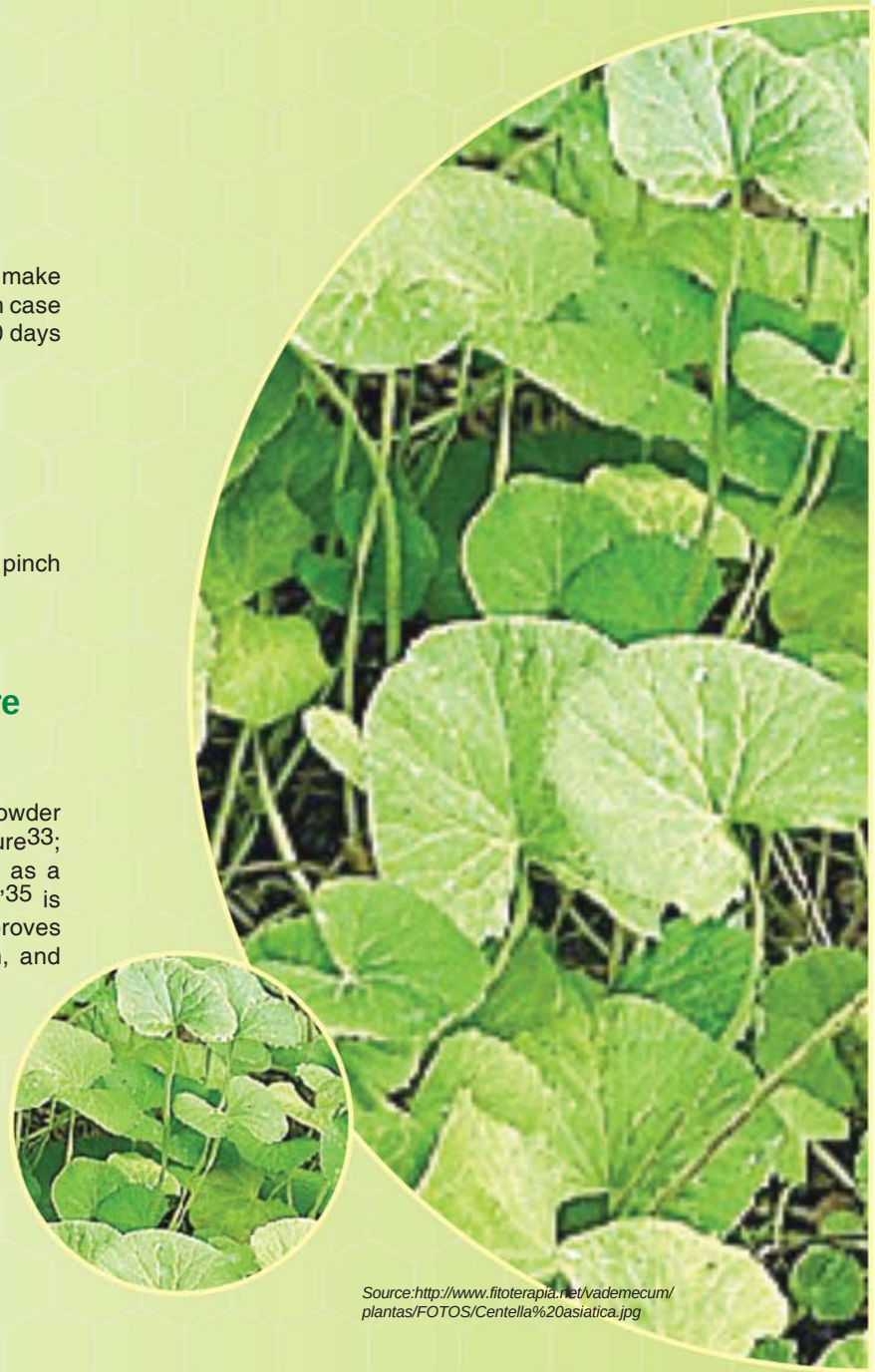
Dysentery
Grind leaves (10) of *brahmi* and guava together to make a paste. Take this paste twice a day for ten days. In case of chronic dysentery, continue the treatment for 90 days
- *Guna Ram Khanikar, Golaghat, Assam*

Memory enhancer
Take the leaf juice orally
- *Savitri Devi, Kangra, Himachal Pradesh*

Diarrhoea
Take two spoonfuls of the whole plant juice with a pinch of salt orally twice a day for a week
- *Sapam Deben, Bishnupur, Manipur*

Uses in Classical Codified Literature

Fresh juice of aerial part is used as brain tonic[32]; powder of aerial parts helps to control high blood pressure[33]; whole plant is diuretic[34]; plant paste is applied as a poultice in case of bone fracture[34]. 'Herbal Tea'[35] is mainly indicated as a health drink. 'Mentat'[5] improves mental functions, mental quotient, memory span, and concentration ability and stress threshold. More than three hundred patents were found on its medicinal applications mainly as an anti-depressant[36].



Source:http://www.fitoterapia.net/vademecum/plantas/FOTOS/Centella%20asiatica.jpg

Source: http://envis.frlht.org.in/pimages/707_1.jpg

Cuscuta reflexa Roxb. (Bat pur)

NIF Database

Uses from Meghalaya

Jaundice

Take whole plant, ground into a fine paste and administer orally
- *Merina Sten, Ribhoi, Meghalaya*

Rheumatism

Apply leaves paste on the aching part
- *Bahunlang Dkhar, Ribhoi, Meghalaya*

Uses from other states

Anthelminitic
Extract of plant (50 g) is taken in 100 ml of water for 7 days
-Prabhat Sharma, Kangra, Himachal Pradesh

Baldness
Plant (250 g) is dissolved in three litres of water and boiled. The decoction is applied for three months.
-Padmakant Sharma, Jaipur, Rajasthan

Skin diseases
Plant paste is applied over the infected area
-Community knowledge, Aizwal, Mizoram

Uses in Classical Codified Literature

Decoction of the vine is mixed in the water for bathing to combat fever[37]; seeds are used as carminative[34]; plant is used for treating jaundice[34;] Extract of the plant is used as diuretic[34.] Product 'Blossom Hair Oil'[38] and 'Wondruff Oil'[38] is an ayurvedic natural herbal formula helps to promote thick and healthy hair. 'Super Herbal Care'[39] is anti fat tablet taken for reducing weight.

Uses of *Phyllanthus emblica* L. (Ko belang)

NIF Database

Use from Meghalaya

Stomachache

Boil the fruit, tea leaves and garlic; take decoction orally
- *Bartyl Suchiang, Jaintia Hills, Meghalaya*

Uses from other states

Stomach ulcer
Equal amounts of *amla* and *Terminalia chebula* Retz. are taken and powder is made. Two spoonful of powder, along with two spoonful of honey and four spoonful of water are taken, mixed properly and administered orally
- *Guna Ram Kanikar, Golaghat, Assam*

Diarrhoea
Juice of amla, with an equal quantity of lemon juice, is administered orally
- *Bina Chaudhry, Kamrup, Assam*

Gynecological disorder
Equal amounts of amla, tapioca and cumin are ground into a fine powder. One spoon of the powder is given orally to cure the disorder
- *Guna Ram Kanikar, Golaghat, Assam*

Eye irritation
Juice from ripen fruit is extracted and an equal amount of honey is added. One drop of the mixture is put in the eyes before going to bed at night
- *Indira Chandel, Bilaspur, Himachal Pradesh*

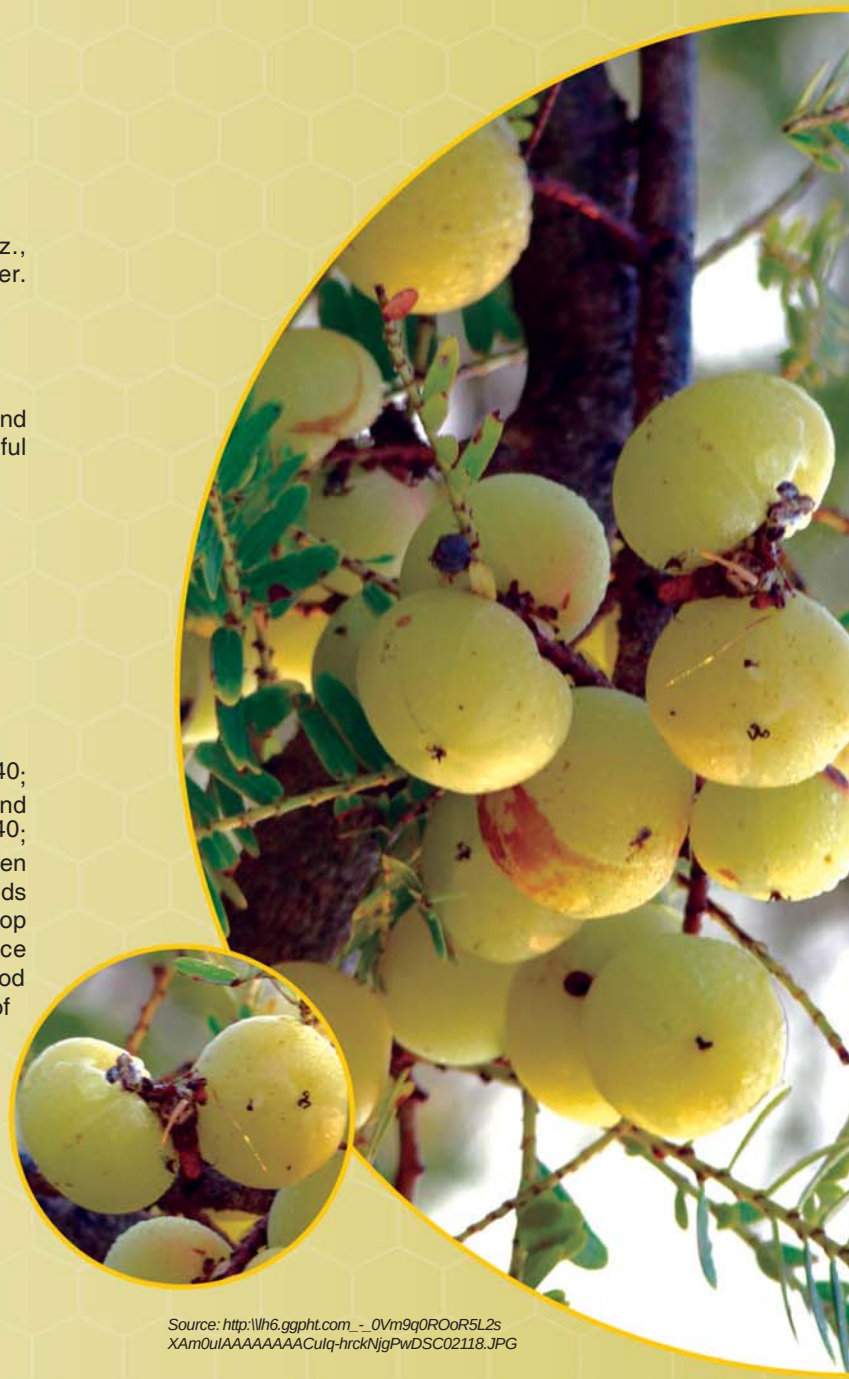
Diabetes
Equal amounts of amla, *Terminalia chebula* Retz., *Terminalia bellirica* Roxb. are ground into a fine powder. Two spoonful of this powder are given orally
- *Pritam Chand, Kangra, Himachal Pradesh*

Jaundice
Equal amounts of *amla* fruit, ginger, black pepper and turmeric are ground into fine powder. One tea-spoonful of this powder is given with honey
- *Nagarmal Bagaria, Nagor, Rajasthan*

Wounds
Pounded leaves are applied on wounds
- *Sevaram Bhaskar, Dhamtari, Chhattisgarh*

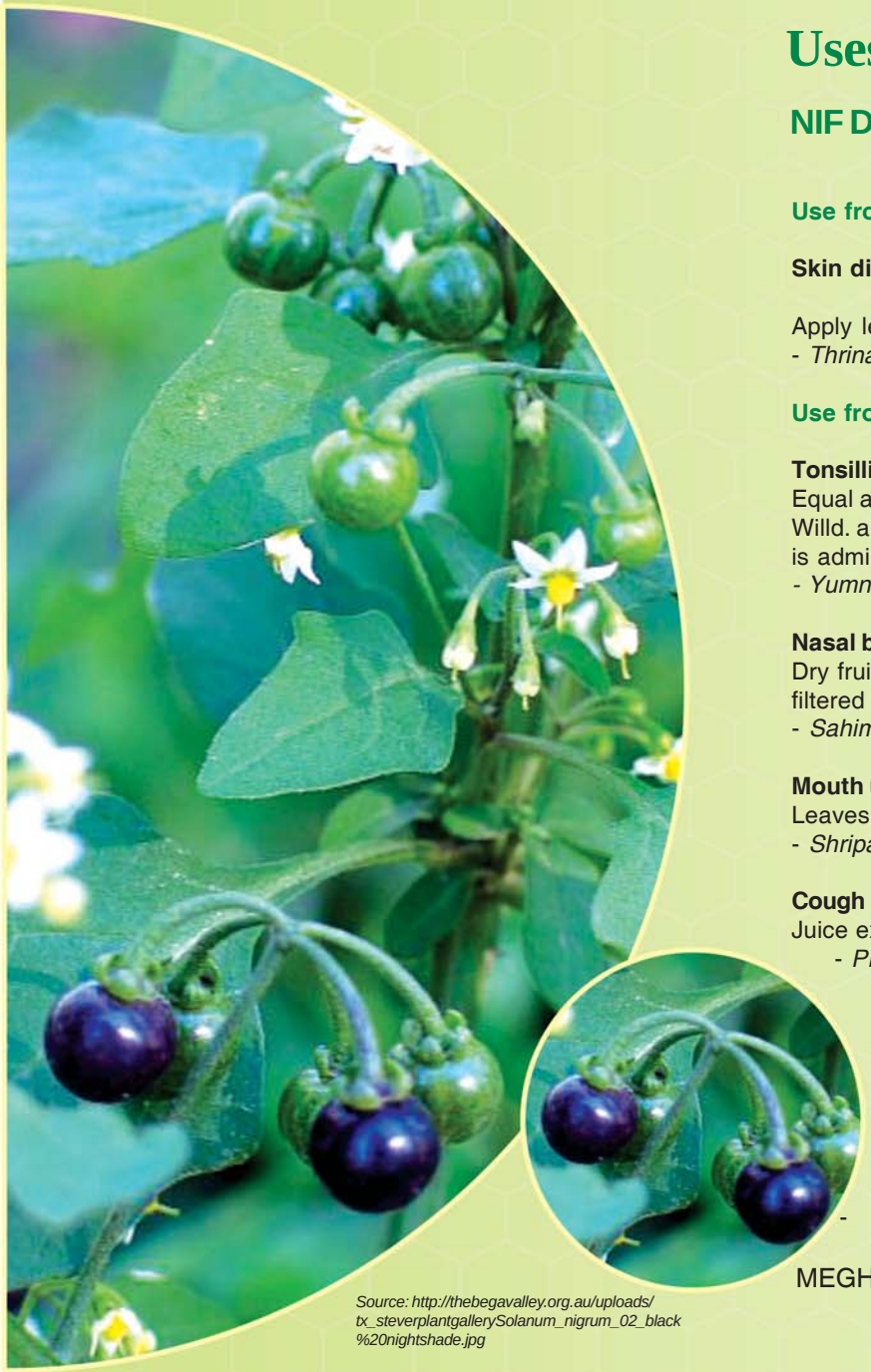
Uses in Classical Codified Literature

Bark and fruits are used in diarrhoea and dysentery[40]; fresh juice of the fruit, mixed with pure cow's butter and honey, is administered to cure obstinate hiccough[40]; juice relieves pain in urine trouble[40]; pulp (2-3g) is eaten with warm milk to get rid of headache[2]; powder of seeds after mixing with ghee is applied on the head to stop nasal bleeding[41]; fruits are taken orally to reduce acidity[42]; decoction of the fruit is taken to increase blood count[43]. *Phyllanthus* is one of the main ingredients of well known medicines 'Triphala, Chavanprash and Amla hair oil'[5]. Seventy-six patents have been found on its medicinal uses such as for diabetes[44], liver disorders and immune deficiencies[45].



Source: http:\\lh6.ggpht.com_-_0Vm9q0ROoR5L2s XAm0uIAAAAAAAACuIq-hrckNjgPwDSC02118.JPG

Uses of *Solanum nigrum* L. (Khynbat sohphri)



Source: http://thebegavalley.org.au/uploads/tx_steverplantgallerySolanum_nigrum_02_black%20nightshade.jpg

NIF Database

Use from Meghalaya

Skin disease

Apply leaves paste topically
- *Thrina Pasi, Ribhoi, Meghalaya*

Use from other states

Tonsillitis
Equal amount of leaves of *Solanum* and *Alpinia galanga* Willd. are ground and tablets prepared from it. One tablet is administered orally twice a day
- *Yumnam Rajenkumar Singh, Imphal West, Manipur*

Nasal bleeding
Dry fruit (25g) is boiled in mustard oil (100g). The oil is filtered and applied on the forehead
- *Sahim Ansari, Lohardaga, Jharkhand*

Mouth ulcer
Leaves are chewed
- *Shripal Singh, Bulandshahar, Uttar Pradesh*

Cough
Juice extracted from the roots is taken orally
- *Priyanka Kumari, Gopalganj, Bihar*

Leaves of *makoi* (200g) are fried in mustard oil (20ml) and administered with little salt
- *Sukhai Mali, Faridabad, Haryana*

Jaundice
Juice extracted from the roots is administered orally
- *Suman Kumari, Gopalganj, Bihar*

Uses in Classical Codified Literature

Powdered fruit is given orally to reduce fever46; juice extracted from the whole plant is applied externally on the burnt part47; poultice of the plant is placed on the aching joint48; fruits are ground and taken orally to cure diarrhoea49. 'Herbolax'5 made from *Solanum* along with other plants is used as gentle laxative in case of constipation and for electrolyte balance. Ninety patents were found on its medicinal uses mainly on hepatitis50,51.

Uses of *Terminalia arjuna* (Roxb. ex. DC.) Wt. & Arn. (Pang klong snam)

NIF database

Use from Meghalaya

Cardiac disorder

Take one cup decoction of bark orally
- *Bioda B. Shullai, Ribhoi, Meghalaya*

Uses from other states

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, Chhattishgarh*

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 pain[52]; bark powder is taken to combat diabetes[53]; and the paste of bark along with leaves of night jasmine is applied externally to cure injuries[54]. Product 'Abana'[5] regulates serum lipids by lowering the cholesterol and thus improves the contractility of the heart. 'Arjuna'[55] promotes effective cardiac functioning and regulates blood pressure. Seven patents have been found on its medicinal uses mainly on cancer[56] and hyperlipidemia[57].

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

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

INNOVATIONS FOR MEGHALAYA

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

01

Ishwar Singh Kundu
Haryana

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.

02

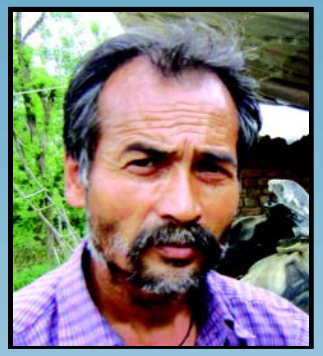
Aloe vera Gel Extractor

Dharamveer
Haryana

The innovator has developed an effective multipurpose unit capable of pulverizing, steaming, and extraction of gel for herbal applications.

With this device, the innovator uses the specially designed pressure cooking chamber to extract the essence from *Aloe vera*. Being a compact portable unit, it can be quickly and easily transported and used anywhere even in the fields, to process herbs and deliver on demand. The present machine has a capacity to process 100 kg of *Aloe vera* per hour. The innovator was supported for production and commercialisation through GIAN North . One unit has been sent to Kenya on a pilot basis for application feasibility study in the country. Once the feasibility is confirmed, a contract order from the country is expected for more number of units. NIF has also filed a patent for the machine in the innovator's name.

03



Kamal Narayan Pradhan 'Gorkha'
Himachal Pradesh

Modifications in Gears for Mountainous Slope

Anybody who has driven on mountainous roads knows that while descending on the slopes, one needs a kind of locking mechanism in the gear to prevent slippages. Kamal Narayan has modified the old gears which may get worn out and may cause accidents if not replaced or repaired.

He has modified the gear arrangement to prevent slippage even in the new vehicles. This innovation has been found very useful by the heavy vehicle drivers. Its dissemination, however, is localised.

04

Ten-in-one Agricultural Implement

Guru Charan Pradhan*
Orissa

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

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

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

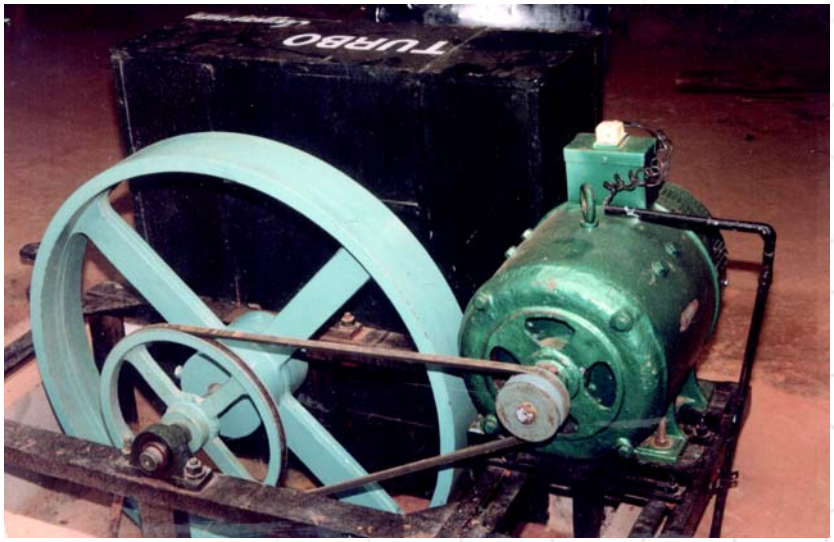
05

G. K. Ratnakar
Karnataka

Modified Hydro Electricity Turbine

Electricity supply in the hills is always a problem with either the difficulty of access or distribution or disruptions.

This hydro electric turbine is specifically designed for the streams in the hilly terrains. It costs Rs. 30,000 and meets the individual electric needs of a rural household. The innovator has installed a few of these turbines in the hilly villages of Dakshin Kannada, Kadagu, Hassan and Chikmagalur districts. The innovator is popularly known as 'Turbo' Ratnakar. He was given State Award in NIF's Second National Competition in 2002 (also see Honey Bee, 14(4) & 15 (1): 11-15, 2003).



06

Motek treadle press

Satish Deb
Chhattisgarh

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.

Raisingh Dahiya
Rajasthan

Biomass gasification system

There are lots of villages in the country which are still not electrified or are receiving power erratically. Crude oil is not a very likely solution as it is depleting and the price is also going higher day by day. Use of biomass as a fuel therefore appears to be a good solution!

People using the biomass gas (producer gas) as a fuel generally complains of choking in the engine after running for a certain period of time. The innovator has changed the conventional design of gasifiers especially the filters and cooling unit to get clean gas, ensuring smooth operation of engine at low operational cost. On an average the biomass requirement is one kg/kW-h and the costs of 10 kW, 25 kW, 30 kW and 35 kW biomass gasifier system are Rs. 1, 25,000, Rs. 2,00,000, Rs. 3,00,000 and Rs. 3,25,000, respectively.

Scientists from TERI (The Energy Research Institute) have confirmed its uniqueness and over fifty users have confirmed its operational practicability. The innovator has sold over fifty units after getting MVIF Support from NIF through GIAN North.

08

Power generation through sewage

K Balakrishna
Karnataka

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 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.

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

10

Improved Multicrop Thresher

Madanlal Kumawat
Rajasthan

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.

11

Sheikh Jahangir Sheikh Usman
Maharashtra

Two-wheeler Based Spray Painting Device

The innovation is a painting device that can be easily mounted on a two-wheeler scooter and carried to a customer's place. Deriving power from the two-wheeler's engine to run the compressor, this device lends flexibility of usage to the painter. This innovation won Sheikh Jahangir a consolation prize in NIF's Fourth National Competition for Grassroots Innovations and Traditional Knowledge Practices in 2007. NIF has also filed a patent application for the same and has supported him through the Micro Venture Innovation Fund. He has also made a scooter mounted washing machine and a scooter mounted flour mill.

12

Portable Painting System

Gurjeet Singh
Himachal Pradesh

Often, users need a small portable spray painting system to meet local needs including indoors. Gurjeet has developed such a system using available parts such as compressor, air tank and a spray gun.

Weighing hardly ten kilograms and costing one-third of the commercial systems, it works very well. By using a tube in place of air tank, the innovator projects that the cost can be reduced for certain type of jobs.

Ghonakanta Gogoi
Assam

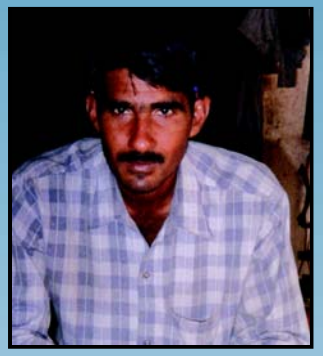
Multi Purpose Wood-working Machine

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

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

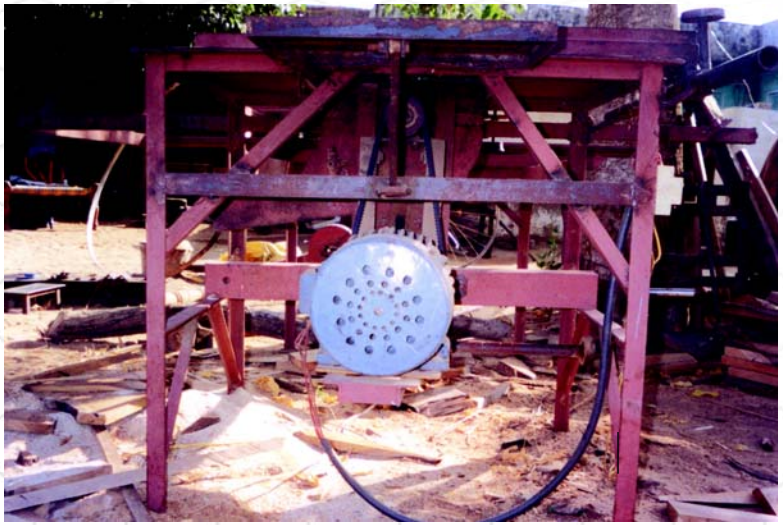
14

Safe Wood Cutting Machine



Kishanlal Jangid
Rajasthan

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



Karuna K. Nath
Assam

Manual Wood Cutting & Bamboo Cross Cutter

Cutting of wood effectively and efficiently is achieved by this machine. The equipment is cost efficient, and can be manually operated with both hand and foot pedal options. Most importantly it is portable, and can be taken to any worksite and has more productivity compared to manual sawing.

This equipment consumes lesser time and labour compared to available saws and has a mechanism and linkages similar to manually operated sewing machine. The work of three labourers can be done by one labour using this machine. The innovator has been supported under the Micro Venture Innovation Fund scheme of NIF and has been doing modest business in the area.

16

Auto Air Kick Pump & Natural Water Cooler

Arvindbhai Patel
Gujarat

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.

Arvindbhai 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 enterpreneurs 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. Arvindbhai 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!

Khimjibhai Kanadia
Gujarat

Panihari - A Head Load Reducing Device

Rural women walk tens of miles with heavy load on their head, which causes stress, discomfort and eventually head and neck injuries.

The product is an ergonomically designed device fixed on top of the head, with two extended supporting rods from the sides of the device. The device transfers the weight carried on the head to the shoulders, which is better positioned to carry weight.

18

Jalpari- The Water Carrier

Madhav Sawant
Maharashtra

Women who walk miles with heavy water pitchers on their head, suffer discomfort and even injuries. This innovation consists of a shoulder slung unit fixed with water canisters balanced on either side.

The carrier has two washable plastic containers of 20 liters capacity in the front and the back respectively. Metallic handle grips for holding and picking, a soft flexible shoulder strap and a tap for taking out water are some of the features of this versatile unit.

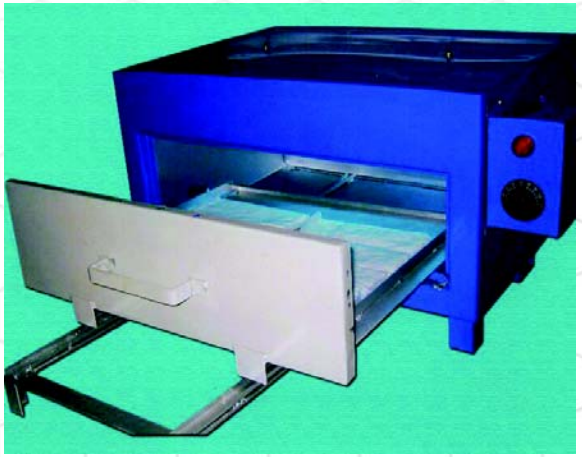
A. Muruganandam
Tamil Nadu

Sanitary Napkin Making Machine

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 standard material 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, the innovator has been able to install fifty units in seven states.



20

Garlic Peeling & Lemon Cutting Machine

M. Nagarajan
Tamil Nadu

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, needs low capital and operating cost. It frees the industry from capacity constraints caused by shortage of labour in peak seasons.

The second product is also used in pickle industry, but for cutting lemons. It is a cost effective machine, having innovative design, with continuous feeding system. It performs precise and standard cutting of large quantity of lemons in uniform shape and sizes. It can be operated by one person and cuts lemon into maximum eight pieces. The innovator has been supported under MVIF scheme and has achieved a turn over of around sixty lakhs since 2003.

Dulal Choudhary
Assam

Beauty Care Umbrella

Protection from harsh rays of the sun is a requirement in most parts of a tropical country like India. An umbrella made from traditional yet multifaceted material is a boon for the common man.

This innovative umbrella is durable, stain free, water proof and is produced from muga silk. It has a pleasing golden shine, which illuminates colour and protects from UV radiations up to 80 percent as per laboratory tests, far better than that offered by conventional umbrellas. NIF had facilitated the technology licensing of the innovation to Assam Silk Development Centre in 2005. The product has been sold to customers in Europe and Australia also.

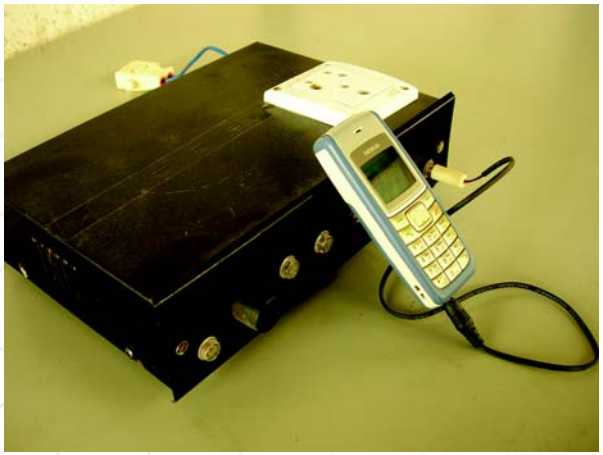
22

Mobile Operated Switch and Multi-media Poster

Prem Singh Saini
Haryana

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.

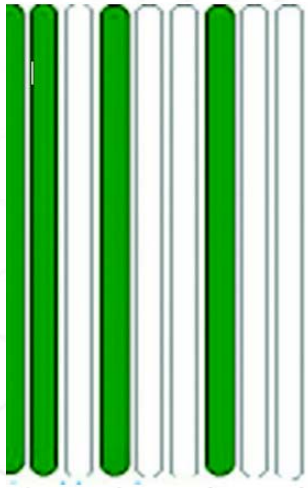


Imli Toshi Namo
Nagaland

Bamboo processing machinery, water pumps, electric hydro generators and others

Originally hailing from Mokokchung, Imli Toshi is a 27 year old serial innovator currently residing in Dimapur. Afterhis BSc inGeology he has been self employed.

Toshi always had a keen interest in machineries and automobiles, which led him to develop many of his innovations. The idea of his first innovation came into his mind while he was washing his car. For this he needed to go to the waterfall just near his house for filling up his bucket with water every time. Then he thought of the possibility of diverting the water to his car-washing place. These thoughts resulted in the development of an innovative low discharge energy pump, which is a novel combination of a vane pump and spiral bladed water turbine. The innovation submerged in flowing water can lift water up to a height of one meter. For this innovation he was awarded in the 3rd National Competition of NIF in 2005.

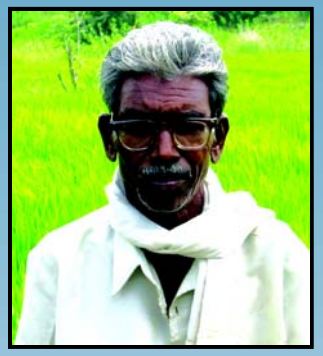


He has also developed a Bamboo processing machinery/lathe for the removal of nodes and outer surface. One unit has even been purchased by the Nagaland Bamboo Mission. Using bamboo powder, which is a by product of this machine, he developed a composite material which he used in further developing a small electric hydro generator and a low cost bamboo wall. Among his other innovations some of the notable ones are bamboo strip making machine, weed uprooter for hilly region, egg-boiler and hot-water filter, incense stick making machine etc.

Toshi has been supported financially from NIF for development and dissemination of a few of his technologies.







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 varierty 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.

Kudrat 9- An Improved Variety of Wheat

Prakash Singh Raghuvanshi
Uttar Pradesh

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.

Jai Prakash Singh
Uttar Pradesh

Virat (JP-6)- An Improved Variety of Pigeon pea

This new variety has coloured flowers, long leaves and bunchy type pods bearing at the top. The seed weight (19 – 20 gram/ 100 seeds), number of pods / plant (500 - 600), big size pods (3 – 5 inch), number of seeds/pod (5 – 6) and perennial yield (1st year 12 -14 quintal/ acre and 2nd year 14 – 15 quintal/ acre) is higher as compared to the local popular variety. This variety requires less quantity of seed (4 – 5 kg/acre) and maintenance as compared to other varieties grown in the region.

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Richa 2000- An Improved Variety of Pigeon pea

Rajkumar Rathore
Madhya Pradesh

This variety has big flowers, long leaves and bunchy type pod bearing at the top. Topping is done periodically, which results in bushy growth. This variety has synchronous maturity with higher yield (24 quintals/acre), more branches / plant (12-14) and more pods/plant (700 – 800) than other local popular varieties of the region. Rathore was given a consolation award in NIF's Fourth National Competition for Grassroots Innovations and Traditional Knowledge in 2007.

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. Gauli & Jeevalbhai M. Gauli, 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.

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