



Africa Calling



National Innovation Foundation - India



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Indo-African cooperation for grassroots innovations

To make any 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. Some are retained as traditional knowledge (TK) practices. Even among the TK practices, experiments take place to produce innovative solutions to local problems. However, the purpose of a particular innovator may often be to solve his problem. But many times, the innovators solve the problems of third parties also. We call such innovations as *Empathetic innovations*. There are not many mechanisms for him to share the knowledge, innovation or practices 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 four years ago to scout, spawn and sustain the unaided innovations and outstanding traditional knowledge from the informal sector of our country. The Network has presence in more than 75 countries but is much stronger in China, Malaysia, Namibia, etc.

Drawing upon this experience, SRISTI helped in setting up NIF (National Innovation Foundation - India) in 2000 with the help of Department of Science and Technology, Government of India, to scale up the idea of learning from grassroots innovators. It is committed to making India innovative by documenting, adding value, protecting the intellectual property rights of the contemporary unaided technological innovators, as well as of outstanding traditional knowledge holders. It aims at promoting lateral learning among local communities to generate low cost extremely affordable solutions of the persistent and emerging problems, and support the diffusion of innovations on a commercial as well as non-commercial basis.

How does NIF work?

Primarily, NIF has six functions: (a) Scouting and documentation, (b) Value addition and research and development, (c) Business development and Micro Venture support, (d) Intellectual Property Rights protection, (e) Dissemination and (f) 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 Council of Scientific and Industrial Research (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 besides creating repository of herbarium specimens. NIF helps in generating a very large pool of open source/public domain technologies also. A small number of innovations are also protected by patents and other IPRs. List of all the projects funded, or invested in, or patents filed in the name of innovators are given at NIF website (nifindia.org).

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 Small Industries Development Bank of India (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 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 sixty two countries for various technologies, NIF has succeeded in commercializing products across countries in five continents apart from being successful in materialising sixty five cases of technology licensing with the help of partner agencies.

What has NIF done?

With major contribution from the Honey Bee Network, NIF has been able to build up a database of more than 1, 60, 000 ideas, innovations and traditional knowledge practices (not all unique, not all distinctive) from over 545 districts of the country.

NIF has filed over 500 patents in the name of the grassroots innovators in India and seven in US and one PCT. Out of these, 35 patents have been granted to grassroots innovations in India and four in US. NIF has funded 174 projects under MVIF to the extent of over Rs. Two and a half crores (half a million dollars approx.). Hundreds of technologies have diffused through farmer to farmer social networks. NIF has

proved that grassroots 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 are not just the consumers; they 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 and the process of globalization.

How can we possibly join hands with African Countries?

- a. There can be a very fruitful partnership between NIF as a source of innovative ideas and technologies and African countries as partner in dissemination, value addition to suit local needs and even commercialization through technology transfers, incentives, promotions, etc.
- b. Cross cultural exchanges may be planned to facilitate the interaction of outstanding grassroots innovators across borders to leverage local knowledge and insights to solve regional, cross-regional or in fact many global technological problems.
- c. The Honey Bee Network model may be replicated in different countries to nurture and sustain grassroots creativity for sustainability. In countries where grassroots innovations movement is already there at various stages, the learnings from Honey Bee Network experience may be incorporated.
- d. The growth rates of many African countries are among the best in the world. In addition to the ongoing efforts, institutionalization of the creative efforts of the knowledge rich but economically poor people, wherever they may be in Africa, may lead to new ideas and enterprises.

I hope that NIF would be able to develop a functional, fruitful and fulfilling relationship with the Governments of the African countries. Grassroots technological solutions, institutions, bio-diversity have a tremendous potential to enrich the repertoire of developmental choices for common people. There is an ample scope for people in India to learn from Africa region and vice versa.



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There are many other variations of these simple innovations. Should we ignore them....because they are simple

simple?

Is simple always sustainable ? 

Grassroots

Innovations



Biomass Gasifier

Rai Singh Dahiya
Rajasthan



Rai Singh, a local mechanic, has developed an efficient biomass gasifier. He has changed the conventional design of gasifiers, especially the filters and cooling unit, to get clean gas and ensure smooth operation of engine at a low operational cost. He makes these in the range of 5-50 hp as per the need of the customer. The wood requirement has been claimed to be 30-35 per cent lower than conventional gasifiers.

NIF has been providing marketing support to the innovator. One machine has also been sent to Germany. Scientists from TERI (The Energy and Resources Institute) have confirmed its uniqueness and over fifty users have confirmed its operational practicability. The innovator has been facilitated under SIDBI supported Micro Venture Innovation Fund (MVIF) from NIF through GIAN North. He also won a National Award in NIF's Fifth National Biennial Competition for Unaided Grassroots Innovations and Traditional Knowledge in 2009. Queries have been received from many countries including South Africa and Uganda.



Solar Mosquito Destroyer

Mathews K Mathew
Kerala



This device makes use of the smell from the septic tank or any other similar waste to attract the mosquitoes, which get trapped in the device. Heat builds up inside the device as a result of direct sunlight exposure. The trapped mosquitoes, thus, get killed due to the accumulated heat. He has commercialized his product, on a small scale and will love to have partners to scale it up. The innovator has also developed house fly trap. He also won a National Award in NIF's Fifth National Biennial Competition for Unaided Grassroots Innovations and Traditional Knowledge in 2009. Queries have been received from many countries including South Africa and Nigeria.

Efficient portable stoves cluster



Efficient wood stove - C Senthil Kumar, Tamil Nadu

The walls of this stove have been insulated using bricks made from special clay, which reduce heat loss and hence increase efficiency. Different variants of the same for household and commercial use have been developed by Senthil Kumar. He has sold over 15000 units of different versions of these stoves.

Portable smokeless stove - Ashok Thakur, Bihar: This stove uses paddy husk, which is cheaply available, as fuel and gives a smokeless flame. The stove and the fuel, both being cost effective, are easily affordable for common man. It weighs 4 kg and needs about one kg husk per hour.



Efficient coconut shell/ wood stove- V Jayprakash, Kerala

Jayprakash has incorporated a secondary burning chamber in the stove to allow maximum combustion of the hydrocarbons, released as a result of the burning of biomass. He has also developed many variants of the same. The combustion efficiency is in the range of 37.67% when wood is used as a fuel and 29.48% when coconut shell is used.



Pollution controller

Birendra Kumar Sinha
Bihar

The noise and smoke pollution created by a diesel genset used by Birendra in his workshop disturbed children in a nearby school. The innovator has designed a pollution control device attached to the exhaust pipe of the engine. BIT Mesra, Ranchi has confirmed considerable reduction in the proportion of carbon monoxide and carbon dioxide in the flue gases after adding the device instead of conventional muffler. The temperature of the flue gas was also reported to be significantly reduced. NIF filed a patent for this device in his name and also awarded him a National Award in its Fifth National Competition for Grassroots Innovations and Traditional Knowledge in 2009. Commercial inquiries are being negotiated currently.



Earthen refrigerator

Mansukhbhai Prajapati
Gujarat



It is a fridge for the common man that does not require electricity and keeps food fresh too. Mansukhbhai came up with Mitticool, a fridge made of clay, working on the principle of evaporation. Water from the upper chambers drips down the side, gets evaporated, leaving the chambers cool. This keeps food, vegetables and even milk fresh for days. He has received national and international exposure and the recent issue of The Economist carried a story in which his innovation was mentioned. Lots of queries have come from around the world for his Mitticool. NIF awarded him a National Award in its Fifth National Competition for Grassroots Innovations and Traditional Knowledge in 2009.



Low cost windmill

Mohammad Mehtar Hussain
Mushtaq Ahmad
Assam



Modified design for Salt farmers in Gujarat

Looking for a low-cost alternative to pump water in the fields for the winter crops, the brothers devised the simple windmill made up of bamboo and tin sheets. NIF facilitated its testing at IIT Guwahati and supported them under the MVIF scheme and the micro incubator scheme. The innovators were awarded in NIF's 4th National Competition or Grassroots Innovations and Traditional Knowledge Practices in 2007. Looking at its potential in Gujarat Grassroots Innovations Augmentation Network- West (GIAN - W) has installed forty units in the salt farming area of Kutch and other areas in Gujarat for pumping up brine water for salt farming. The designs have been considerably improved with the help of innovators and other experts. It is an excellent example of transfer of technology from north east to western part of the country.



Natural Water Cooler

Arvinbhai Patel
Gujarat



In Arvinbhai's 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. He has obtained a patent for this cooler, which was facilitated by SRISTI/GIAN West. He was also supported under the Micro Venture Innovation Fund scheme of NIF for commercialisation of this technology. GIAN West also facilitated the non-exclusive technology transfer of this green cooler to several entrepreneurs. The innovator has been earlier awarded by NIF in its National Competitions for Grassroots Innovations and Traditional Knowledge Practices for two of his other innovations.



Compost maker

Gurmeel Singh Dhonshi
Rajasthan



Fertility value of well decomposed compost is well known. Decomposition can be fastened if the biomass is aerated, humidified and properly mixed. Dhonshi's machine is a tractor PTO driven machine, which can thoroughly mix and moisten the bio-wastes reducing the time of decomposition.

The machine can turn and pulverize a row of biomass of size 11 ft x 6.5 ft x 2.5 ft (i.e. total 400 ton) in one hour. The tractor consumes 3.5-4.0 liter diesel per hour. The compost has better fertility value as compared to FYM and vermin-compost. The total time for converting the biomass into manure processed by this machine is 25 -40 days, which is otherwise three to four months using conventional methods.

Tree pruner



Tree pruning is mostly done manually using knives. Tractor powered machines though available abroad are not affordable to medium farmers. This machine is a low cost alternative and can do top dressing as well.

The machine can prune trees of height 20 ft (top-down) while keeping blades vertical and can top dress the plants of height 12-15 ft. It can cover trees in a circle of 10 ft diameter from a point where tractor stands. It can prune 2000 ft long rows of trees at a spacing of 18-20 ft on both the sides of a road or in a plantation in one hour. The tractor consumes 3.5-4.0 liter diesel per hour.



Groundnut Digger and Separator

Yusuf Khan
Rajasthan



This unit is retrofitted on a standard 35HP tractor and consumes four litres of diesel per hour and collects groundnuts from one hectare a day after the pods have been dug out. The unit can also be run on uneven terrain and can be used to sift out small stones, solid residue and garbage from fields and country roads. Yusuf won a National Award in NIF's 3rd National Competition for Grassroots Innovations and Traditional Knowledge in 2005. He has been supported under the Micro Venture Innovation Fund of NIF for commercializing his innovation. In 2006, the technology was licensed to a Vizag based company called Ardee Hi-Tech Pvt. Ltd., who wanted to use the concept to develop a sea beach cleaner.

Trench digger



The trench digging unit developed by Yusuf Khan can be fitted to any tractor. The 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.



Hand operated water lifting device

N Sakthimainthan
Tamil Nadu



Sakthimainthan built his hand operated water pump in response to a dearth of available pumps that could be afforded by small farmers. He built five prototypes over a period of fifteen years before finally perfecting his design. The water-lifting device is operated by rotating a handle. It is simple in design and has a high discharge at low cost compared to the motorized pumps and conventional hand pumps. The pump has discharge of 20,000 lph at 0.75 m head. The unit has also been tested by TNAU, Coimbatore and improved by CSIR-CMERI Durgapur. It is useful device for drainage as well.



Chandraprabha water gun- 'Rain Gun'

Annasaheb Udgavi
Karnataka



During sugarcane cultivation, Annasaheb faced difficulty in irrigating the dense crop. Also, he discovered that the best method to solve the problem of aphids and white flies was through a high-pressure water spray. Hence, after studying the conventional sprinkler irrigation system, he designed a new rotor sprinkler to suit the sugar cane crop. It can sprinkle water over more than 150 feet radius in a predetermined angular range with the help of a five hp engine. He won a National Award in NIF's 1st National Competition for Grassroots Innovations and Traditional Knowledge Practices in 2001 for his water gun. He has also made a sugarcane harvester for which he got a consolation award in NIF's 4th National Competition in 2007.



**Motorcycle operated
multipurpose farm implement
& Seed cum fertilizer dibbler**

Mansukhbhai Jagani
Gujarat



Using the chassis, drive and power of an Enfield Bullet motorcycle in front, Mansukhbhai has retrofitted an attachment with two wheels at the rear with a tool bar to fit various farm implements. This meets various needs such as ploughing, weeding and sowing seeds. He has also developed a seed-cum fertiliser dibbler. This device enables more efficient sowing, faster and cheaper than other options available. This equipment is helpful in both sowing the seeds and fertilisation of the crops which require fertilisers to be drilled in the ground, near the crop roots. Wastage of seeds and fertilisers is prevented. Due to uniform sowing the germination percentage is also increased.





Foot pedal operated drill

Vikas Shinde
Maharashtra



This foot operated drill is fitted with a drill bit, used for drilling holes in various materials. The drill bit is gripped by a chuck at one end of the drill and rotated while cycling the device. The plate is attached with a handle for raising or lowering the position of a job. He has made this device by using old gear and spare iron parts. It is used to drill larger pieces of material made of metal, wood, PVC etc. It could be very useful in those areas where electricity is irregular or insufficient. It costs about Rs 2000/- only.



Bamboo Incense Stick making machines

Usman Sheikhani
Chhattisgarh
& **L Ralte and L Sailo**
Mizoram



Usman Sheikhani has developed a specialized bamboo cutter to cut bamboo strips into small pieces for preparing incense sticks and toothpicks. The quality of the output is good, the machine is portable, requires no electricity and maintenance cost is minimal. 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 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. A bamboo processing machine for incense stick making has also been developed by L Ralte and L Sailo of Mizoram. It has higher capacity and includes both the function in one machine viz. bamboo stripping and then cutting strips into incense sticks.



Bamboo Incense Stick making machine

Paresh Panchal
Gujarat



For the processing of bamboo, electricity operated high capacity machines are available, which are suitable for industries but not for rural poor who make bamboo strips and sticks using knife for various purposes. Pareshbhai has made two machines, one for slicing the bamboo pieces of definite size and length, while the other for cutting slices into sticks. The machines, which have the capacity of producing 30 kg of sticks per day, are manually operated, and easy to use and maintain. The blades are made of high carbon steel and needs to be replaced after producing 10,000 kg of splints.



Milking Machine

Raghav Gowda

Karnataka



Finding skilled labour for milking a small herd of cows is a problem faced by many farmers. But using big machines for milking is a luxury which only a large farm or a dairy house can afford. Raghava developed an easy to operate and low cost milking machine that can milk 1.5-2 litre of milk per minute. The machine can be used to remove all the milk from the udder. The cow feels as if it is being suckled and does not experience any pain. Machine has been sold in many countries around the world and queries have been received from Nigeria, Kenya and South Africa as well.



Cycle operated Animal shaver

Mohd Idris
Uttar Pradesh



Idris has developed a bicycle-powered horse shaver, which removes the drudgery of combing, sorting, gradual shearing which takes hours when done manually. This is a detachable arrangement whereby the bicycle can be used as usual without any problem after detaching the chain that drives the speed cable. It can be used for shearing sheep wool also. He won a Consolation Award in NIF's 3rd National Competition for Grassroots Innovations and Traditional Knowledge in 2005. His innovation was also showcased in the recent block buster movie- 3 Idiots.



LPG operated Press

K Linga Brahmam

Andhra Pradesh

Hussainbhai Nabubhai

Ajmeri

Gujarat



The main problem washer men using coal iron press face is unavailability of coal. Electric iron presses were not an option for them because of irregular supply and higher cost of operation. To solve these problems, the innovators developed the gas operated iron, which is simple in design and has low operating cost. Queries have been received from many countries including Zambia, South Africa and Ghana.



Tree climbers

Late M J Joseph alias Appachan
Kerala
Mushtaq Ahmad Dar
Jammu & Kashmir



M J Joseph had developed a device under the guidance of his father that helps in climbing coconut or areca nut trees. The palm climber consists of two metal loops that are meant for holding the legs. There is a film made on his innovation by Discovery Channel and is very popular on Youtube.com. Recently, both the innovator and his father unfortunately passed away. Providing him marketing support, NIF also facilitated sale of his climber to customers in USA, Maldives, Thailand, Australia, Brazil, Mexico etc.

Mushtaq's climber is a small portable device that makes climbing trees/poles simple and easy. It uses body weight to lock the climbing steps and is very light, low cost and easy to maintain. NIF has provided incubation assistance through GIAN Cell J&K at Srinagar University. The technology was also licensed to an entrepreneur in Ahmedabad (India Innovatix), who has come up with an improved version of the climber in consultation with the innovator.



Multi Purpose Processing machine

Dharamveer
Haryana



Dharamveer has developed a multipurpose unit capable of pulverizing, steaming and extracting gels for herbal applications. Being a compact portable unit, it can be quickly and easily transported and used anywhere. The present machine has a capacity to process 100 kg of Aloe vera per hour. It can also process various herbs/fruits like Indian gooseberry, Java plum, mango, tomato, orange etc. The innovator was supported for production and commercialization from NIF through GIAN North. One unit was sent to Kenya on a pilot basis for feasibility study in the country. Dharamveer won the State Award in NIF's Fifth National Competition for Grassroots Innovations and Traditional Knowledge in 2009. NIF also filed patent in his name for the device. Queries have been received from many countries including Cameroon and Ethiopia.



Mini Sanitary Napkin Making Machine

A Muruganantham
Tamil Nadu



Muruganantham has developed a machine that produces quality sanitary napkins at a low cost. It requires four persons to produce two pads per minute. Costing less than half of conventional options, this machine produces sanitary pads @ Rs. 1.5 to Rs. 2.0 per pad approximately.

Muruganandam has also designed a coin based napkin vending machine. With support from the Micro Venture Innovation Fund of NIF, the innovator has been able to install over 100 units in 14 states. He has received support from other sources as well. He won a National Award in NIF's Fifth National Biennial Competition for Unaided Grassroots Innovations and Traditional Knowledge in 2009. Queries have been received from many countries including Kenya, South Africa and Nigeria.



Crutch with spring/shock absorbers

Archana Konwar
Assam

Archana has designed a crutch with shock absorbers for the comfort of the user. The shock absorber can help in preventing the shoulders and underarms from the ill-effects of the shocks while the user is walking. The crutch is also provided with a light to be used during the night and a bell to alert other commuters. NIF has helped in fabrication of these crutches based on the idea of Archana, a school girl from Dhemaji, Assam. She was discovered during a shodhyatra (learning walk) organized by SRISTI every summer and winter in different parts of the country. She got NIF's Ignite award in 2010 for creative school children.





Walker with adjustable legs

Shalini Kumari
Bihar



Shalini's grandfather uses a walker to assist him while he walks. But she noticed that he could only use the walker comfortably while walking on a level surface. Her grandfather enjoys walking on the terrace but he finds it difficult to walk up the stairs. Seeing her grandfathers' plight, Shalini came up with the idea of the modified walker with adjustable legs. She has also thought of including a folding seat so that the user can rest for a while when required and fitted a horn and a light to it as well. It has been fabricated with the help of local designers. She got NIF's Ignite award in 2011 for creative school children.



Richa 2000 perennial pigeon pea variety

Raj Kumar Rathore

Madhya Pradesh

Progressive farmer Raj Kumar Rathore has developed a high yielding perennial pigeon pea variety with a bushy growth habit. He first began his foray into commercial plant breeding in 1997 when he noticed an odd plant in his field of ICPL-87. The plant remained green for a longer duration and had bigger flowers and longer leaves. He propagated the plant next year in isolation but found that yields were low until he began topping the plant twice a year to encourage further branching. He was given a Consolation award in NIF's Fourth National Competition for Grassroots Innovations and Traditional Knowledge in 2007. NIF also filed an application under the PPVFRA 2001 for his variety.



New Gram Variety 'Sushil Laxmi'

Bala Sahib Patil
Maharashtra

This variety of gram produces dual pods, a consistent high yield of 14-15 quintal/acre, and performs well in irrigated as well as rain fed conditions. He stabilized the characters of the plant over the course of four years of recurrent selection and named the variety 'Sushil Laxmi' in honor of his mother and the patron goddess of this village. He also started a company named "Sushil Laxmi Hybrid Seeds Pvt. Ltd." in 1997. Diffusion of his variety in several states gives him a lot of satisfaction. Who says Indian farmers are worried about large Seed companies!! NIF gave him the State award in its Fourth National Biennial Competition for Unaided Grassroots Innovations and Traditional Knowledge in 2007 and also filed an Application with PPVFRA for the registration of this variety.



HMT & DRK paddy varieties

Dadaji Ramaji Khobragade

Maharashtra

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. This variety has an average yield of 40 - 45 quintals per hectare with short grains, high rice recovery (80%), better smell 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 developed the DRK rice variety through selection from "Deepak Ratna" variety, also developed by him. The variety is resistant to several biotic and abiotic stress with the yield about 60-80 quintals per hectare. Dadaji got National Award in NIF's Third National Competition for Grassroots Innovations and Traditional Knowledge in 2005 and the Diffusion Award in NIF's Fifth Competition in 2009. NIF has filed an application under PPVFRA 2001 to register his variety. Dadaji has been supported from MVIF scheme of NIF.

Kudrat 9- An improved variety of wheat

Prakash Singh Raghuvanshi
Uttar Pradesh



Prakash Singh has developed a number of improved wheat, paddy, mustard and pigeon pea varieties, which are high yielding with robust stem, bold seeds, good taste and resistance to major pests and diseases. Kudrat 9 has been developed by using simple method of selection. It 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 a large number of ear bearing tillers with long spikes and has a hardy stem. The average yield of this variety is 55-60 quintals/hectares. NIF has filed applications under the PPVFRA 2001 to register his pigeon pea (Kudrat 3) and wheat (Kudrat 9) variety. A few others of his varieties are also in the pipeline. He also won a National Award in NIF's Fifth National Biennial Competition for Unaided Grassroots Innovations and Traditional Knowledge in 2009. Prakash has been supported under MVIF Scheme of NIF for commercializing the innovations.



Wilt resistant groundnut variety 'DVT 1'

Dhirajlal Virjibhai Thummar

Gujarat

An improved groundnut variety has been developed by a farmer Dhirajlal Virjibhai Thummar through selection from the GG 20 variety. This early maturing variety is resistant to wilt due to stem rot. Flowering in 28-30 days, DVT 1 matures in 95-105 days. At 3200-3500 kg per hectare, the yield is also higher than that of the locally cultivated varieties (GG 20 & GG 2). The oil content is around 42-45 per cent. This variety performs well in average monsoon as well as in less irrigation conditions.

Dhirajlal won a National Award in NIF's Fifth National Competition for Grassroots Innovations and Traditional Knowledge in 2009. He has also been supported under the MVIF for commercializing his variety.

Improved and high yielding varieties of Guar (SR-23), Moth bean (SR-1)

Sundaram Verma
Rajasthan



Sundaram developed both the varieties through selection. The chief characters of both are uniform height, synchronous maturity and higher yield. The guar variety 'SR-23' is much suitable for both arid and semi arid regions. The moth bean variety 'SR-1' is of short duration (60-65 days) and superior to the other commercially released varieties in respect of yield & resistance against major pests and diseases. Rajasthan State Seeds Corporation, Jaipur had purchased seeds of Guar variety SR-2 and Moth bean for distribution among farmers of various regions of Rajasthan. The feed back of the farmers has been encouraging.



Improved varieties of Chilly and Onion

Balwan Singh
Haryana

Chilly (Balwan mirch 500): This particular variety is tolerant to heat and humidity and has good keeping quality. It performs well in saline condition and is suitable for use as both vegetable and spice.

Onion variety (Balwan Pyaj): The main features of this variety, with medium pungency, are good keeping quality, bigger thickness of rings, high yield as compared to local varieties, and tolerance to *Stemphylium* blight.

**High yielding groundnut variety
“Moralo”**

**Thakarshi Savaliya
Gujarat**



Thakershibhai is known throughout Junagadh as the father of the ‘Moralo’ groundnut variety, popular for its sweetness, productivity and resistance against the ‘Tikka’ disease. In 1988, while weeding and interploughing, Thakarshibhai and his son, Nitin noticed two plants that stood out from the rest. They were greener, their leaves were thicker, and they bore more flowers and pods. These plants were marked and stored by Thakarshibhai for seeds. He propagated the seeds separately each year, noticing that the crop matured in only 90 days, a month before the regular variety. He named his groundnut variety “Moralo” because the pods resemble a peacock in shape. This variety also has smoother ridges on the pod and a stronger peg.

Community knowledge based herbal products

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

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

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

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

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

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

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

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

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





Honey Bee Network

www.honeybee.org

Engaging with the grassroots innovators, farmers, policy makers, scientists, students from Africa. Read more in the following pages.

From the *Honey Bee* archives



Image source : http://www.vidiiani.com/maps/maps_of_africa/large_detailed_contour_map_of_africa.jpg

Calling...

International First Prize: from an observation to an innovation, Auta Gravetas, Uganda

When a farmer Auta Gravetas noticed in Uganda that the sweet potato plants in a part of field having *Lantana camara* on the border did not have pests incidence, he evolved a hypothesis. Can lantana leaves help extend the shelf life of sweet potato slices? Since a large number of people in that region survived on sweet potato slices as a staple food when they could not afford maize or paddy, the shelf-life of these slices was directly linked to the food self provisioning. He had an idea. He put *Lantana camara* leaves in between the layers of dried slices stored for future use. He could extend the shelf-life and food self provisioning by almost a month and a half more. The weed became a resource.

In an international competition organized by IFAD, Rome with the help of Society for Research and Initiatives for Sustainable Technologies and Institutions (SRISTI) for scouting innovations from seventy countries, this innovation was considered worthy of first prize, given at Global Knowledge Conference - 2 organized in Malaysia, 2002. Neither *Lantana camara* was indigenous, nor the knowledge had been transferred by one generation to another over centuries. Still the way of knowing was traditional, i.e., observing an odd phenomena, discriminating, abstracting, hypothesizing, testing and developing a robust rule or technology. National Innovation Foundation (NIF) with the help of Honey Bee Network has scouted scores of other uses of this plant which was introduced as an ornamental by British colonial rulers in India and Africa more than 100

years ago. Use of *Lantana camara* as a pesticide for controlling pests resistant to chemical pesticides in cotton can be a very powerful solution across the world. The weed has damaged a large number of forest regions around the world. The knowledge developed over a long period of time or in recent past at grassroots level is something that we need to learn from.



The institutional context of such a knowledge becomes evident when a farmer like Auta is able to experiment and a District Agriculture Officer

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knowledge becomes evident when a farmer like Auta is able to experiment and a District Agriculture Officer

recognizes the merit, submits his entry for the international competition and SRISTI is able to identify its potential and thus contributes to its recognition by IFAD. When further work is not done on this technology by the Ugandan National Council of Science and Technology (which does not even take note of it officially despite the author having helped them in writing their indigenous knowledge policy), another dimension of knowledge systems and their institutional context becomes evident. When World Bank which funded the exercise of writing this policy takes a nonchalant view of the potential that this innovation has, still another dimension of institutional context becomes apparent.

Farmer's name : Auta Deogratias; Address : Okidoi / otataip parish asuret / county village, Soroti district, Uganda; Scout's name : Olupot. H.I.; Institution : Department of Agriculture; Designation : S.A.A.O; Address : Dept. of Agriculture, P.O. Box 61. Soroti, Uganda

Honey Bee Vol 11(1):14, 2000

Embracing the Honey Bee Philosophy

A conference titled the "Regional Conference on Innovation and Appropriate Technology: Intellectual Property Aspects and the Transfer of Technology," organised by the World Intellectual Property Organisation (WIPO) and the Ministry of Law and Constitutional Affairs, took place in Lesotho on February 27 and 28, 2002. Shri T N Prakash, editor of *Hittalagida*, represented the Honey Bee Network at the conference and made two presentations. A representative from Kenya evinced interest in establishing a NIF in Kenya along the lines of NIF, India. The Lesotho government representatives were very eager to get the green grassroots technologies of their country documented by the Honey Bee Network.

Honey Bee Vol 13(1):25, 2002

Vegetative Gully healing

Grace Bura,

Mvumi Division, Dodoma Rural District, Tanzania

Grace Bura, a 50-year-old lady from the Dodoma rural district of Tanzania has developed a technology for rehabilitating badly gullied land combining trash and soil cross-gully checks with vegetative barriers. In 1982, she developed a technology referred to as “*kinga maji la nyasi*” (blocking water with grass in Kiswahili). The starting point is to form a layer of trash and soil along with vegetative barriers across the bed of the gully (a typical gully is three to ten metres wide, and two metres or more deep) reinforced with pegs, and to build up gradually in layers as sediment is captured behind it. On top of the barrier a dense line of mikayeba (tree cassava: *Manihot glaziovii*) is planted. Trash continues to be added to the nowliving barrier until the gully is fully silted up. The barrier, one to two metres wide, appears as a contour line across her land and continues to function against erosion. Mikayeba is not just a living structural support, its leaves are commonly used in cooking as well. Where the gullies are more severe, she experiments with cuttings of *Commiphora africana* as a vegetative barrier. The treatment does not end with the sedimentation of the gully bed. The land is left fallow for one or two seasons, after which she plants a “catch crop” of maize to test the condition of the soil. The significance of Grace’s achievement is that she has managed to reclaim land from gullies, using vegetative barrier. There is no “engineering” as such: no stone is involved, and earth is only used to supplement trash, rather than as a bund or barrier in itself. Furthermore this is a woman’s achievement, and shows how women’s innovations are not just household-oriented.



Road Runoff Harvesting

Musyoka Muindu,

Mwingi Town, Mwingi District, Kenya

Kenyan Musyoka Muindu, 70, has developed a way of harvesting road runoff water and distributing it in his cultivated fields using various types of banks and channels. To ensure family food security after retirement – and to boost his pension – he embarked on what other land users in the area considered impossible at first: harvesting runoff water from the road using modified and enlarged *fanya chini* (a channel with the earth thrown down slope) and *fanya juu* terraces (embankment above the channel). A main channel of about 300 metres long leads the runoff water from the road to the farm. There are also supplementary channels that capture runoff from a hillside. The estimated catchment area is at least 10 hectares in size. This supplies water to a cultivated area of about five hectares. The main channel directs runoff into the farm through an initial *fanya chini* structure. When the water reaches the end of the channel, it is diverted into a similar structure that leads the water in the opposite direction. In other words, the runoff water is distributed in a zigzag fashion through the farm. At certain points, the farmer has put water control gates into specific



channels to select the direction of the flow. The structures that transport the water within the fields are mainly *fanya chini* but some are *fanya juu*. In both cases the embankment is made of earth, excavated from the channel. The channel's dimensions are approximately one meter deep and one to two meter wide, with embankments that are 1.5 m high and spaced at 18 m apart. The embankments are stabilised with grass or perennial crops such as banana or sugar cane. The maintenance involves frequent sediment removal to sustain channel capacity, repair of broken channels and embankment sections and replanting grass or dried-up fruit trees along the embankment.

Using spiny Cactus lianas in the control of the termites and nematodes in rices, corns, fonio crops and orchards

Alhassane Pendessa, Guinea, 25 December 2005

Touguikhouré is a small locality situated 25 km away from the county-seat of the prefecture of Kindia. It is an important zone of production with high agricultural potentialities. However, for last few years, the village has faced a lot of problems related to the damages caused by the insects notably the termites and nematodes in rice, corn, fonio field and in the orchard. Farmers, with no financial and material means to use chemical products, decided unanimously to lead indigenous research in finding local products to solve the problem they encountered. Tafodé Camara, farmer in Touguikhoure has succeeded in developing a solution based on the spiny cactus, a toxic and dangerous plant for the human consumption. Liana is cut from the forest and one has to avoid loss of its sap. The liana is cut in pieces and soaked in container with a proportional quantity of water for about 12 to 24 hours until a concentrated solution is obtained. This solution is poured in termites' holes which were previously opened with picks. The holes are finally covered with leaves from a toxic plant

called meli or sosso in local language (*Erythrophleum guineensis*). In using the solution, the users have to avoid the contact of the product with skin and the eyes. Its application has to be done by using a small broom and/or a sprayer. This innovation helped Touguikhoure farmers' to have very effective results in the region for the last few years. Currently, this local innovation is practiced by many farmers in the prefecture of Kindia.

Control of salinity using lime + millet husk + dried mango leaves

Njuma Ceesay, Njonji Drammeh, Gambia, Sally Sanyang, 14 March 2006

Salinity according to farmers is a limiting factor in rice production. For many years, farmers have been struggling with the problem and no solutions were found. Many efforts such as fertilizer applications proved futile. Recently, the farmers in Pirang tried lime mixed with millet husk and dried mango leaves to control the problem. This combination, according to them is applied and incorporated into the soil before transplanting. Within the course of the season they realized that their rice plants were doing well in terms of good tillering, growth and flowering. After harvest

their yields were better than before. Now many farmers in the inland valley are using the innovation.

Control of iron toxicity using lime + dry oil palm tree flower

Musa Jawneh, Gambia, May, 2005

Iron toxicity has been a major problem for rice farmers in the lowlands especially in the mangrove and associated mangrove areas. Farmers have used many coping strategies since ideal solutions are seldom found.

Musa Jawneh, president of the National Farmer's Platform, said he and a couple of farmers tried Lime + dried flower of oil palm tree + rice husks. About 7.5 kg of dry flower of oil palm tree is ground and mixed with 7.5 kg of rice husk and 10 kg of lime. These were thoroughly mixed, applied and incorporated into the soil before planting. The plot size measured 10m x 10m. The combination worked very well as traces of iron toxicity were minimal and farmers' yields were increased. In the following year the combination was replicated and farmers in the particular lowland observed the performance of the innovation and were very motivated.

*Honey Bee Vol 18(3) & 18(4): 22-23, 2007**

Grass cutter control in the rice field

Fassou Haba, Guinea, 16/03/2006

Fassou Haba is a farmer of Batouata, a village of the forest region of Guinea. He said that in their childhood when he was living with his uncle, he used to supervise the fields. When his uncle noted the effects of the grass cutters, he prepared soil at different places where he asked the children to urinate. He mixed the earth with urine and a bark powder of a very poisonous tree (*Erythrophleum guineensis* (Tely in poular, Meli in soussou, Kondo in kissi). As the urine, contained ammonia, the places attract those grass cutters that come to eat these mixed earths. Once the grass cutters ate this earth, they can't move. They advance for few meters and they fall down. The following day the children come to collect those dead grass cutters and bury them to avoid poisoning.



Seed Treatment with Tamarind Leaves

Tati Diassana, Mali, 18/12/06

Mrs Tati Diassana is a rice producer who lives in Djénéna in the Urban San Commune. She uses the tamarind (*Tamarindus indica* L.) leaves for safe storage of seeds. The seeds are completely dried under the sun by covering them with tamarind branches. After this the tamarind leaves are removed from the branches and mixed with the seeds. At the end of the seed drying operation, the mixture of seeds and tamarind leaves is put in a tightly closed container for storage. The container should be opened only when seed is needed. Tati, the producer, has always used this technique to control insects. Recently, several farmers in the villages where tamarind is available practice this technique to store the seeds of rice, millet, sorghum, soybeans, peanut, etc.

Control of Termites in Cassava Using Pounded Neem Leaves, Water and Salt

Modou Lamin Darboe, Gambia, 06/03/06

Termite damage in cassava (*Manihot esculenta* Crantz.) has been on the increase. Several methods

such as chemical spraying, using lime and many other techniques proved unsuccessful. Modou Lamin Darboe, a small scale farmer and a local researcher developed an innovative practice to control termites in his cassava field. He used 15 kg *Neem* (*Azadirachta indica* A. Juss.) leaves pounded and mixed in 15 litres of water. A small quantity of salt was added to the mixture. The cassava cuttings were soaked for 12 hours before planting. When he planted the cassava cuttings after few days he realized that the cuttings were performing well. No traces of termite damages were found and at harvest, the tubers were better than before. Farmers were then introduced to the technology the following year and they are highly convinced of the innovation and a lot of them have started using it countrywide.

Improving Soil Fertility Using Groundnut Shells

Awa Njie, Gambia, 10/4/2006

Soil fertility has been a major concern for rice farmers for many years now. Chemical fertilizers are expensive and are not affordable by farmers. They cost almost the same as 50 kg per bag of imported rice. Farmers tried many options such as composting and use of cow dung, but they have realized the labour involved in

composting is quite high and the availability of dung in sufficient quantity is not assured and the cost is also high. Awa Njie is one of the farmers who grows both rice and groundnut. During groundnut decortications she uses the shells from the groundnut and applies them in her rice fields. During land preparation she incorporated the shells into soil and planted her rice. After harvest she realized there was an increase in her yields. When neighbouring farmers saw this, they also tried the same with similar results. The innovation is now adopted by most of the farmers in her village.

Red Ants (*Oecophylla longinoda*) Control in Coffee Plantations

Ouo Ernest Sonomou, Guinea, 22/03/2003

Ouo Ernest Sonomou is a farmer from the village of Gopouta in the Guinea Forest region. One day, as he was cutting a bunch of palm kernel fruits on his farm, he stepped on a termitary coffee tree. All of a sudden he saw the red ants fleeing from the coffee tree. Stung by curiosity, he looked for another termitary with the view to ascertain whether these black ants from the termitary were behind the sudden flight of the red ants. He saw that it was

indeed under the effect of the little black ants that the red ants fled. Since the red ants hinder coffee harvest, he started using these termitaries to drive away the red ants. He shared this with other farmers, and many practice this innovation today.

Use of Bamboo Stems in Termites' Control

Sekou Camara, Guinea, 06/04/2006

Termites cause a lot of damage in rice, maize, peanut, and pepper fields by cutting roots and stems. This damage is significant in most parts of the fields. Mr Sekou Camara, aged 64, has been pursuing farming in the village of Lamikhoure since his early youth. His field is located close to the village. Because of the difficulties in accessing inputs that are expensive, Mr Sekou Camara resolved to find a low cost solution. He cut bamboo pieces of about one metre length and planted these in the termite affected plots at intervals of one metre in all directions. Four to five days later he saw that the termites abandoned the crop to lodge in the hollow bamboo pieces. He carefully removed them and shook them off into fire. He applied the technique to the peanut, maize, and pepper and obtained the same result by using in addition to the bamboo stems, millet or sorghum culms.

Seed Conservation Using the Small Pepper Powder

Alhassane Pendessa, Guinea, 2006

Pepper (*Capsicum minimum* Blanco.) is harvested from the field at its ripe stage, dried in sunlight, and pounded into powder. A spoonful of pepper is mixed well in 50 kg bag of rice seeds. The seeds must be well dried before treatment. It is recommended to store the treated bags in a dry place on wooden palings. They must be regularly checked too. This innovation is widely used by farmers in Upper, Maritime and Forest Guinea. The small pepper powder unleashes a repugnant stench that prevents pests from attacking the seeds. Treatment remains effective for four to five months.

Kani powder (*Xylopia aethiopica* (Dunal) A. Rich.) to conserve food

Alhassane Pendessa, Guinea, 2006

The fruits of this tree are harvested, dried in sunlight for about ten fairly sunny days. A darkish color after the ten days shows that the fruits are well dried. These dry fruits are then pounded into a fine powder. This powder is used for conserving foodstuffs like cassava

roots, peanuts, maize grains, cowpea, beans, etc. The recommended dosage is a spoonful of powder for 50 kg of stored foodstuffs. This can also be used for seeds conservation at the same dosage. The kani powder is an efficient method of controlling insect pest of stored foodstuffs. Its effects are reported to last for more than seven months.

*Honey Bee Vol 19(1): 18-19, 2008**

Wild Rice Control through Straw Slashing and Burning after Harvest

The fields of Moussa Dembele, Zeguesso were highly infested with wild rice full of rhizomes. With limited means, he could not afford chemical inputs, and started pondering over alternate solutions. The wild rice biomass increased every year. After considering various alternatives, he decided to set fire to the rice straw after harvest. This action was fruitful in the first year, because he noticed that the straw and wild rice grains were all destroyed. Thus in the subsequent years, when the rainy season approached, he conducted an early season ploughing that helped him to gather all the wild rice rhizomes on his plot and then set fire to the rice straw after harvest. At the end of the season, he noticed a significant

reduction in infestation compared to the previous year. At the end of three years, the infestation reduced considerably. Neighbors noticing Moussa's success adopted it and ever since, it has become a common practice in the area.

Distracting Rats using Dried Fish

Gilbert Dembele is a farmer of Zeguesso and member of PLARIRM (Participatory Learning and Action Research in Integrated Rice Management) committee in the same village. For the past several

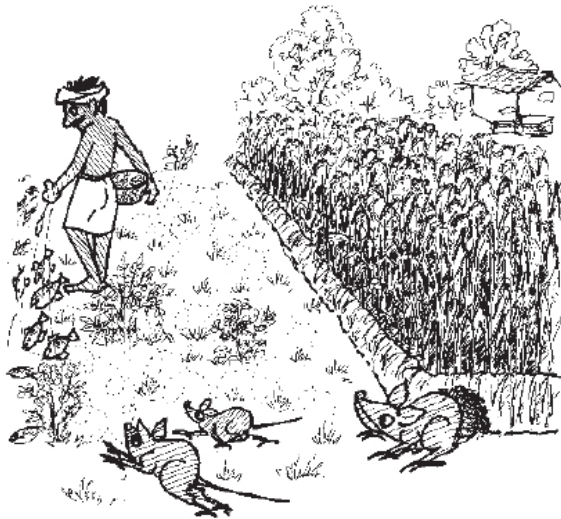
years, he had been facing considerable damages caused by the rats in his rice field. He had used chemicals to fight them, but in vain. So he decided to use fish as decoy.

He spread some pieces of dried fish on the rats track towards another direction. This practice helped to divert the rats from the field. Since then, the rat attacks have decreased and some other farmers in the neighborhood have also decided to try out the innovation.

Struggle Against Termites

a) Use of crushed millet and the cotton seeds

This method dates back to olden times, and suggests the use of crushed millet and the cotton seeds to control termites in houses. While building a house, before laying the foundation i.e. before laying the first bricks, the owners mix cotton seeds with ground millet and spread the mixture all along the building line. The bricks are placed on this mixture. Houses built according to this practice are never infested with termites. This is explained by the fact that the millet attracts the ants while the cotton seeds attract the termites which are eaten by the ants.



b) Use of tobacco

For many years, farmers in Builsa had not been able to avoid termites destroying their houses and crops. Mr Awendayie is about 48 years old and has been farming since he was 20 years old. He grew up nearby a termite hill, 10 m away from their compound. "The ants used to get into the house to build hills along the walls of the room and sometimes they ate our cloths and destroyed stored grain in our barns," he recalls. For many years they have tried using chemicals and other local herbal materials, but without any success. One day he decided to try burning the local tobacco which had been cured and preserved for some time. He dug up the termite hill, exposing the tunnels, and stuffed them with rolls of tobacco leaves. After having set fire to it, he covered it with more leaves and then added sand to force the smoke through the tunnels. One month later the rainy season set in.

"Normally I would observe termites whenever the rains started, but I never saw them again for the months to come," he recalls. As



many farmers faced the same problem, he invited his friends and told them about his successful discovery. Also, in some areas, in the Upper East/West regions of Ghana, indigenous farmers control termites by pouring a mixture of water and powdered tobacco into a hole that has been dug into the nest of the termites. This is practiced in communities where tobacco is cultivated.

Rice Ratooning

Rice farmers at Adugyama near the PADS site Biemso harvest their rice crop by pinching off the panicles. According to them, one could obtain a good ratoon crop if one stepped on the stubble after the panicle pinching so that the stubble lied on the ground. They did not manage the stubble after harvest and so took the ratoon yield as a windfall gain. Acheampong of the CSIR-CRI Rice Research Programme then decided to validate it. After consultation with Dr Monte Jones (then in WARDA), Acheampong, in collaboration with Dr Lawrence Narteh

(currently the ROCARIZ Coordinator) decided to set up field trials on rice ratooning. As a result a rice ratoon yield of up to 2 tonnes/hectare was recorded. As part of the AgSSIP Rice Project, Mr Acheampong in year 2005 collaborated with Dr Annan-Afful (the National IVC coordinator) to conduct further trials on incorporating ratoon rice into ricebased cropping systems. Rice-based cropping systems involving rice ratooning, legumes and vegetables are recommended for lowlands that have adequate residual soil moisture to support it. This improves the lot of economically poor farmers in terms of balancing their nutrition, creating employment and wealth, and alleviating poverty. The Inland Valley Rice Development Project that covers five regions of Ghana intends adopting ratoon rice in its cropping systems in all favorable ecologies.

Use of *Metè* (*Phyllanthus discoïdes*) Powder in Increasing Peanut Production

For many years now Sekou Camara has been recording yield losses in peanut cropping in the Lamikhoure zone. Because of the scarcity and high cost of fertilizers, he opted for the use of *Phyllanthus discoïdes* bark (*Mètè* in Sосу language). *Mètè* is a spontaneous plant that produces many fruits in the dry season. During fructification Sekou Camara removed the bark, dried

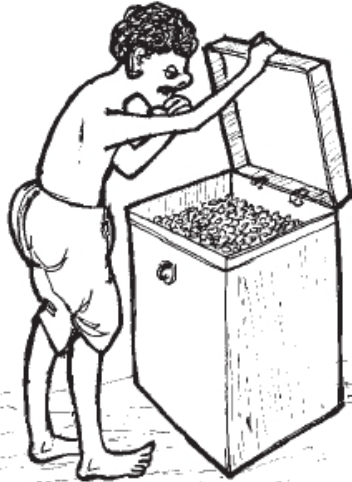
and ground them. With the powder obtained, he coated the peanut seeds he had previously soaked for seeding. Camara noticed a significant increase in yield with every application of this technique.



Storing Seeds and Other Products with *Hyptis spicigera*

Mamadou Dembele, the chief of the village of Zeguesso, was for a long time facing the problem of seed storage at his village level. The chemical inputs sold in the market were causing a lot of health problems to the people. So he pondered over a more local solution. On the lowland watersheds grows a

plant called *Hyptis spicigera* (*Labbah* in Minianka language and *Bénéfing* in Bamana language). This plant has a repelling smell and a very bitter taste. He decided to try it out. He processed the leaves into powder and coated the seeds with it. He did not observe any termite or insect attacks in his grain store or on the bags left on blocks. For years, he used the technique without observing any attacks. With these positive results he decided to use it as basement in the construction of his grain stores. The results have been very encouraging and ever since many farmers have adopted the practice.



*Contributed by Dr. Paul van Mele,
Technology Transfer Agronomist
(p.vanmele@cgiar.org)

Honey Bee Vol 19(2): 18-20, 2008*

Protecting Tomatoes from Frost

Is it possible to grow tomatoes in cold weather? Yes, it is. Mr. Francis Handwa, a farmer in Zimbabwe, uses cooking oil bottles or milk bottles filled with water to keep tomato plants warm. Francis fills cooking oil bottles or milk bottles with water until they are three-quarter full. While the plants are still young, he places the bottles upright on the ground among the tomatoes. He places one bottle beside every third plant in every other row. He makes sure that the neck of the bottle appears above the plants.

When the plants get taller than the bottle, he places chick stacks besides the tomato plants. He hangs a bottle on each stick with a string. The bottles hang 10cms above the plants. When the temperature drops below freezing, the water in the bottle freezes. The tomatoes stay frost free even though the surrounding grass and shrubs are covered with frost. P R Makaya an expert on fruit and vegetable, provides an explanation to the phenomenon that when water has things dissolved in it, it freezes at temperature a lower than when it is pure. The water in the tomato cells contain dissolved salts while the water in the bottle is relatively pure. In frost conditions, pure water freezes earlier than the water in the plant cells. When the

water freezes it releases a lot of heat. The heat released when the water in the bottle freezes keeps the air around the tomatoes warmer than the surrounding area.

Honey Bee 6(2): 5, 1995

Innovations by Farmers in Central Africa

The Central African forests are not easy environments to farm or make a living. Constant innovation is needed in order to maintain yields.

An innovator in Mbalmayo, Cameroon, planted the vine *Sida veronicifolia* in his fallow land to restore soil fertility, said to have been degraded by misuse of fertilizer. The leader of one women's group planted sweet potatoes to maintain soil moisture in her field. There was drought but her crops did not fail. Other innovations include experimentation with different soil types for pineapple, cassava planting methods, soybean cultivation and processing, use of Elone (*Erythrophleum suaveolans*) bark as a pesticide in tomato fields for nematode control, storing maize seed in ash for pest and disease control and putting Chromolaena leaves in plantain holes before planting for plantain stem borer control.

Honey bee 9(3): 24, 1998

Honey Bee ..

Dialogues with Africa

Recognition for a Powerful Initiative

Sande F Olocho

*Eduscope Consultancy, Kenya, East Africa,
osande2002@yahoo.com*

I listened in to your interview on the BBC radio and must say was touched and moved by your powerful innovation and initiative..... What you are currently doing in your country has powerful ramifications to the rest of the world as we push for the Millennium Development Goals..... I wish you all the very best in your initiatives and hoping that we can get to cross-pollinate more ideas on the issues raised herein for the good of mankind.

Honey Bee Vol 17(4) & 18(1): 46, 2006/07

IRED joins Honey Bee network

Dr O D Date

IRED West Africa, 19, Balogun Street, Anifowose, P.O. Box 326, Nigeria

I work for IRED (Innovations et Reseaux pour le Development - or Development Innovations and Networks) as its Representative for Anglophone West Africa..... I believe, that there is a lot to share on both continents. I received the Honey Bee a few times when I was at the University of Ilorin and wish that you place IRED West Africa on your mailing list.

Honey bee 7(1): 22, 1996

Bekele Samuel Mengistu

Badawacho District, SHONE, P.O.Box 18, Ethiopia

I am glad to send you my warm greetings from here. I am 24 year old and a graduate of Awassa College of Agriculture and now I am Government employee, Horticulturalist and an extension communication expert. I want to be a member of your network.

Honey Bee Vol 11(4) & Vol 12(1): 41, 2000/01

Honey Bee Links at South African Government Site

Rhoda Louw

Clanwilliam Living Landscape Project, Archaeology Department, University of Cape Town, Private Bag, Rondebosch 7700, Cape Town 8000, South Africa

.....I came upon the Honey Bee Network through our Governmental Department of Arts, Culture, Science & Technology's website.... Please refer me to other authors who see such a link between science and society, particularly in rural areas.

Honey Bee Vol 12(4): 27, 2001

Dr. Maryam Niamir-Fuller

C/o F A, Dar es Salaam, Tanzania

I am writing you to enquire whether it is possible to obtain information on indigenous innovations in the field of livestock production, veterinary and range management. I would like to focus particularly on innovations done by women, but if that is difficult to find (which I suspect it is), then innovations by pastoralists in general.

Honey Bee Vol 5(2):23, 1994

Biodiversity Contest in Africa!

Timothy A Volk

Menonite Central Committee Nigeria, Jos, Plateau State, Nigeria

I read with great interest an article on Biodiversity Contests in the Haramata. I am very interested in how you organized such contest and what was the motivation for people to participate? Have you ever done such contest in schools? Some of my work is at schools, your idea has prompted me to think about a contest here.

Honey Bee Vol 5(2): 23, 1994

Reaching Ghana

Femi Akomolafe

Gsm Africa: +233-24-261145

I am involved in a local NGO at Kasoa in Ghana. I heard about your organisation on the BBC and I am fascinated by the philosophy of the Honey Bee Network....

Honey Bee Vol 13(4):25, 2002

Innovation Movement Brewing in Kenya

Tollanda Wabwire

Nairobi, tollanwab@yahoo.co.uk

While reading, I came across your site (www.sristi.org) and thought it has a lot of useful information. I want to pool together similar grassroots technologies and projects from Kenya and other African countries but I need ideas on how I can start.....It would work well this way and then we can request to have a link on your site (and vice versa) in order to widen the network even further. If we can fan this vision from many small places, soon it will become a complete revolution in development thinking.

Honey Bee Vol 17(1) & (2):51, 2006

Berckemans Masheka Zihindula

FODEPAD, B.P. : 241 Cyangugu, Rwanda

I am very delighted to get in touch with you..... participating in your exchange network in order to enhance my knowledge and have some new skills to work for the rural development in my country.

Honey Bee Vol 11(4) & Vol 12(1): 40, 2000/01

the Dialogue continues....

Better wealth for the common wealth: a network report from south africa

India and Honey Bee were the keywords at the Mabalingwe resort in Northern Province of South Africa as the governmental heads of the Science and Technology (S&T) departments of 20 out of 54 Commonwealth countries gathered to mull over the working of the Commonwealth Science Council (CSC). Also present were India's own HRD and S&T minister, Dr M M Joshi, and eminent science leader, Chairperson, NIF and DG, CSIR, Dr R A Mashelkar. They watched with quiet satisfaction the presentation of the work carried out in India for the last 14 years by the Honey Bee Network towards recognising the potential of grassroots innovations in combating poverty and drudgery.

How it Happened

In 1998 the Commonwealth decided to review the working of the CSC and decided to transform CSC into a Commonwealth Knowledge Network (CKN). The dissatisfaction with the previous mode of functioning led to the pursuit of an alternative

model for CKN, one that would link informal and formal knowledge with the aim of minimising poverty.

Farmers Lead the Way

It took carefully coordinated work by SRISTI, GIAN, NIF and Honey Bee Collaborators, with CSC and other South African counterpart to make the June summit a success. Three creative, innovative farmers from Gujarat in India went to the Northern Province to demonstrate that 'small' people can do 'big' work. Amrutbhai Agrawat, Mansukhbhai Jagani and Bhanjibhai Mathukia travelled all the way to South Africa with members from SRISTI, GIAN and NIF, with the specific goals of transferring technology, and more importantly, of building capacity. Collaborating with the faculty and students of the Techniven Engineering College in Vehmbe district of Northern Province, the innovators developed intermediate and locally required technologies like an improved donkey cart, a bicycle sprayer, an improved harrow, a groundnut digger and other small implements for cultivation.

The story of the donkey cart goes thus. The GIAN team on its first reconnaissance visit found that there were no bullocks in the area and donkey carts were in use. Now these donkey carts were made using the differential and wheels of a car. And why? Because there are so many cars around that keep getting disposed off. But this made the cart so heavy that three donkeys were required to pull it. Amrutbhai, having already developed a tilting bullock cart, was commissioned the task of developing a cart suitable for local conditions. He developed one, minus the car differential, which almost reduced the cart's weight substantially and required only one donkey to pull it. Mansukhbhai made a cycle based sprayer, which could generate a new job in just about Rs 2500. Bhanjibhai showed through a film how he had made a 12 hp tractor which could help small farms. A farm visit to the Capricorn District of Limpopo Province facilitated a direct interaction between the



innovators and local farmers.

Towards a Global Network

Impressed by what they saw, the Ministerial gathering reconfirmed the importance of concentrating on grassroots innovations and traditional knowledge as a focal point for CKN. Adopting the Honey Bee model, it further stressed that the CKN should in fact become a Commonwealth Innovation Network (CIN) by developing a culture of innovation. It was also resolved that every activity of CSC should be evaluated by its potential to make a definite and positive difference to the lives of the poor in the member countries. The process of poverty alleviation while rewarding creativity seems set to find a wider audience.

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2002





Learning from the students: Creativity Knows no Boundary

Indigenous Animal Husbandry Practices from Central Tanzania

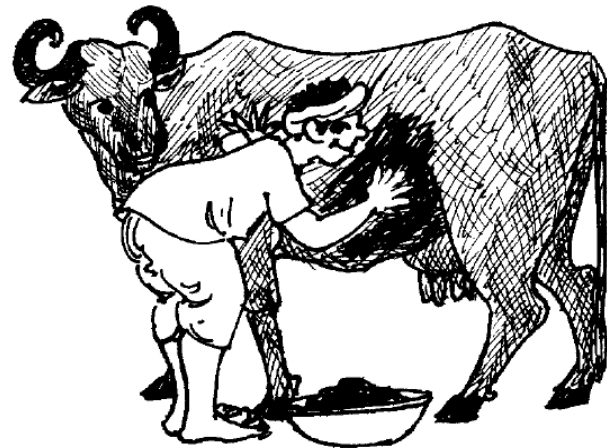
Goromela E H

In central Tanzania farmers use various indigenous methods for controlling animal diseases, disorders and ecto parasites, and for the preservation of milk. These farmers belong to various ethnic groups speaking different languages/dialects. Following practices were collected from the Wagogo and Wamasai farmers.

1. Controlling Ecto parasites: To control tick infestation of cattle they smear fresh dung on the animals. (Heavy tick infestations are known to sometimes cause cattle death in this region.) It is believed that the fresh cattle dung deters the ticks and keeps them from attacking the animals.

2. Preservation of Milk: Wagogo and Wamasai farmers use the wood of 'Msingisa' (*Boscia angustifolia*), 'mtumba' (*Boscia grandifolia*), 'mkuliza'

(*Maerua angolensis*), 'mwima chigula' (*Maerua parvifolia*), 'msisilo or mtego' (*Diplorychus* spp), *Capparis fascicularis*, *Euphorbia candelabrium*, *Mundulea sericea* trees or shrubs to sterilize the container in which milk is to be stored (Chenyambuga et al 1993). The wood of any trees/shrubs mentioned above is burned so that it generates smoke. The container, made from gourds, is fumigated with this smoke and washed with clean water to remove the charcoal dust before storing milk in it. Pre-treating the container in this way is believed to increase the shelf-life of the milk.

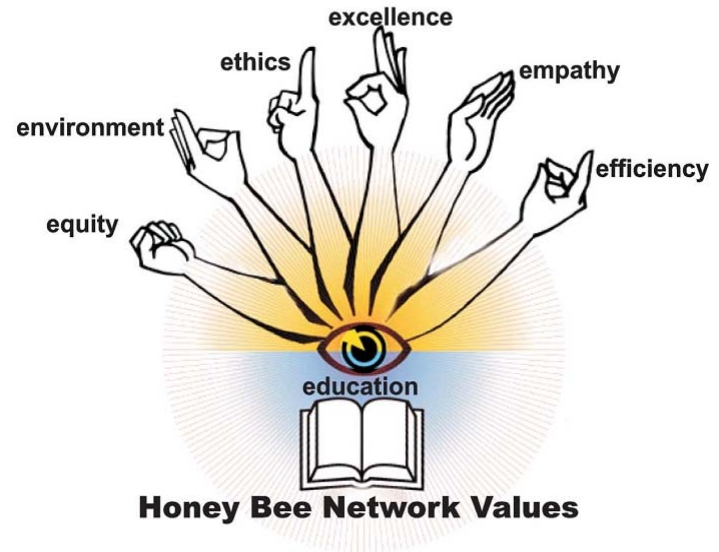


It can remain up to 2-3 days without getting fermented. The gourd also imparts a desirable flavour to the milk.

3. Controlling Animal Diseases: People use the following plants and shrubs to treat different animal and poultry diseases and disorders. (Komwihangilo et al. 1993). *Euphorbia* spp ('Mtakalang onyo') stem is pounded and the mother liquor is used to expel retained placenta in cows. *Stegnotaenia araliaceae* leaves are pounded and mixed with water to treat goats and cattle which experience difficulty in breathing. The roots of *Maerua edulis* are mixed with 'mtumba' (*Boscia grandiflora*) to treat poultry diseases.

4. Storage of Maize: Farmers of the Wagogo tribe use ash from burned dried dung of cattle to treat maize grains against weevils (beetles) after harvest. The ash is mixed with the grains and kept in storage structures commonly known as 'Vihenge'. This method of storage has proved to be very effective. Some farmers use ash even to treat the grains against the beetle known as *Prostefanus truncatus*.

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Honey Bee Network Values



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THE GOLDEN TRIANGLE

