

Honey Bee



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Agony in Diversity

A Voice of Creative Grassroots Innovators and Traditional Knowledge Holders

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Agony in Diversity

All the children had gone away to collect plant samples, but there was one girl who followed a different trail. As a part of 21st Shodh Yatra in Arku Valley in Vishakapatnam, bio-diversity competitions were organized among children in various villages. This was a village with a difference. After landslide had damaged the original village and killed large number of people, the whole village was relocated to a site, a kilometer away. We were sitting on the steps of a common meeting place, waiting for the children. After a while, children came one after another and started showing the samples of the plants. Their mothers and in some cases fathers also were standing behind, observing the process of quizzing children. Most children had brought similar plants.

After a while it was the turn of Roshni, an eight years old student. She brought 25 leaves, all of different kinds, the only one to do so. We were surprised and intrigued, as to why did Roshni behave so different from all the other children. We wanted to meet her parents. When we asked her to call them, she stood still, with tears in her eyes. We did not understand. Then a lady standing there informed that Roshni had lost her mother in the landslide and her father had abandoned her to marry again and live separately. She was being brought up by her grandparents.

Is that the reason she knew so much about diversity?

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Draft National Innovation Act: Exclusion of the Majority

Department of Science and Technology, Government of India has taken a bold step by putting the draft of proposed National Innovation Act for wider public scrutiny. The debates on proposed policies, which affect the whole country are always welcome. The draft Act provides a special window for low cost technologies: “The Appropriate Government shall take special measures for supporting public, private or public-private initiatives, which facilitate and encourage Innovation, including in low cost technologies, products and services for the benefit of the common man whether in urban or rural India”. Excluding this para, the whole draft essentially deals with providing incentives for research by public and private sector and ensuring confidentiality rights of the innovators, individuals and firms through contractual or non-contractual exchanges. The Act also provides for the fiscal incentives for those who invest in technologies and those who set up facilities in the innovation park or special innovation zones. The firms or research labs are exempted from custom and excise duties, central sales tax, duties on equipments manufactured by the units located in the zone, export benefits and exemption from research and development cess, if applicable. Likewise, other proposals include: direct tax holidays on profits from sale, transfer or use of copyrighted/patented technologies along with other commercial rights; exemption from income tax for venture capital firms, which invest in the domestic unlisted companies engaged in innovation, weighted deduction and exemption from capital gains tax arising from securities made by angel investors in innovation zones and /or companies /parks/ universities supporting innovation zones and parks.

As readers would notice, the dominant belief behind such a policy draft is that major drivers of innovations are firms / organized labs / or R&D institutions. While there is indeed a need for providing support to start up companies and also the research institutions, delinking these incentives with the need to serve the informal sector, is a major lacunae of the draft. Even at present, not even 0.01 per cent of the total budget of science and technology is spent for the informal, unorganized and often uneducated sector of the country, which sustains the livelihood of at least 60 per cent people of the country. The new draft Act provides specific concessions for the formal sector but assures only a consideration for the informal sector. In this dichotomy of concessions and considerations, the destiny of the grassroots innovators and traditional knowledge holders will be designed. There is a need for a very radical departure from this draft if the National Innovation Act has to truly reflect the aspirations of the creative and innovative majority of the country. My suggestions are:

- a. There must be at least ten per cent of the total funds of the DST earmarked for the informal sector raising that to at least 40 per cent by the end of 12th Five Year Plan. Otherwise, the entire value chain for the knowledge rich, economically poor people will remain starved of resources.
- b. Today, there is no angel fund worth its name to invest in informal sector technologies which, are yet to become products, ready for market. Tens of thousands of such technologies whether of herbal origin or otherwise have been documented by the Honey Bee Network and not even few hundred have received support in the last decade. Unless we assume that the patience of the people will grow with time, such a policy is fraught with risks. The number of districts affected by extremists violence triggered by extreme disparity in income, very low level of social and economic development and preponderance of unjust social order is only going to increase. While Government may consider this as a law and order problem, the basic root of the crisis lies in lack of opportunity for the creative majority.
- c. Continued intransigence of the policy makers on the issue of supporting low cost technologies developed by informal sector does not bode well for the innovation system in the country. The transaction cost in dealing with such innovations should be especially reimbursed/paid for so that corporate as well as civil society initiatives grow in this field.
- d. The testing fee, even by public sector, often is same for large or small sector and even the tiny informal sector. This is true in various sectors including automobile, energy, agriculture and food processing, utilities, etc. There has to be a national fund for meeting testing and prototyping costs of ideas that go through an expert sieve.
- e. Ironically, many public sector labs, which agree to test and improve innovations from informal sectors expect to share the IPRs of the value added technology. The existing fiscal incentives do not seem to be sufficient enough to provide such support without expecting financial returns. There is a need to incentivize the scientists in public and private sectors to provide value addition support without sharing IPRs unless a very significant modification has been made in such technologies. Ideally, the intellectual property may be shared but the rights could be assigned to the innovator for eventual benefit from the same. Idea is to provide incentives to scientists who add value and who should get fair academic credit. In some cases, they could also get up to 20 per cent of the financial benefits, if any, accruing from the commercialization of the technology exceeding Rs.5 lacs, i.e., till the innovator is able to earn at least Rs.5 lacs from the value added innovation, scientists should not expect to share any part of it. Alternatively, they may be given tax break for income foregone on account of this policy.
- f. The proposed innovation Act conveys considerable legitimate concern about the confidentiality of the information produced by innovators or other stakeholders around the innovations. Similar concern has not been expressed in the Act about the traditional knowledge of the local communities and

- individuals, which can be a basis for development of remunerative innovations. Today, any scientist from public or private sector is free to document the knowledge of indigenous / local healers or crafts people and bring their hitherto unknown technical knowledge into public domain without attribution, acknowledgment, or reciprocity. This Act would not change this unfair, unethical and unprofessional practice a slightest bit. There is a need to incorporate appropriate clauses in the Act to safeguard the knowledge rights of the individuals and communities in the innovations with or without value addition claimed for protection by the formal sector. Indian Patent Act will also need amendment in this regard. One cannot assume all the traditional knowledge to be either prior art or in public domain eroding in the process peoples' knowledge and innovation rights.
- g. There is a need for a fast track registry of innovations with attendant grant of rights on undisclosed technical innovation so that there is a smoother flow of information between small and large, formal and informal and organised and unorganised sectors of Indian economy. The conventional patent system is not suited to meet such needs. This system may not provide any long term patent protection but only help in ensuring precedence in the knowledge right conflicts and provide only five to eight years protection. Even in European Union, small and medium enterprises have been pleading for reforms in the current IPR system to make it conducive for small players. Similarly, Australia in their national innovation system has tried to address this issue by reducing cost, shortening time for grant to three months and shorter duration of protection. In European Union, subsidies have been suggested for the first time, patents for small enterprises besides lowering the processing fees, offering targeted subsidies besides tax breaks. Likewise, access of small and medium enterprises to alternative low cost dispute resolution procedures is also currently under discussion.
- h. The science departments in undergraduate and postgraduate colleges around the country have to be mandated to provide access to their labs and facilities for innovators from informal sector whose ideas have gone through some scrutiny as a part of National Innovation System. Unless Innovation Act incentivizes investments in the decentralized and distributed infrastructure development, the benefits will not percolate to the masses. Assumptions should not be that ideas and innovations primarily emerge from high-tech formal sector though such opportunities for high-tech sector are indeed required.
- i. The access to technical journals, local language databases of patents and other innovations sources including open access databases at community level through one lac common service centres being set up by the government must be incorporated as a part of Innovation Act. Even if one in ten thousand students in colleges and schools reads a few articles on the subject of their interest, their imagination and ability to innovate will improve enormously. Today, even the TKDL (Traditional Knowledge Digital Library) having a hugely rich data on traditional medicine is not accessible to Indian researchers and innovators in formal or informal sector. It is supposed to be available to the International Patent Offices. Such asymmetry in access to knowledge created by public investment is obviously not conducive to promotion of innovations in the country. A national effort to make various kinds of databases with adequate safeguards, available to local people is required and should become part of a commitment in National Innovation Act.
- j. The public media whether radio or television provide no time for dissemination of information about innovations, which may serve public interest, invite entrepreneurs for non-exclusive licenses and thus create linkages between innovation, investment and enterprises. The National Innovation Act should include a provision for earmarked time everyday for innovations dissemination, whether covered by patents or otherwise after some scrutiny about the validation by appropriate organizations.
- k. The term 'innovation eco system' does not only include the innovators, income tax or other tax authorities or other such actors. It also includes testing, calibrating, packaging, communicating and other related infrastructures.
- l. The role of standards is very crucial in promoting innovations. Several leading labs refuse to test certain technologies for which standards are not available. Given such an attitude, innovations in India will always lag behind the consensus in the profession as reflected through the standards. There must be a regular mechanism of review of standards in collaboration with innovators in formal and informal sector so that our system of standards become an active partner in the innovation system.
- There are many other areas where the draft Act needs improvement from the point of view of individual, unattached innovator who has limited resources and limited access to the powers that be. The Act rightly focuses on incentivizing angel investment in innovations and also tries to protect the confidentiality, so necessary to many of these transactions. It also deals with the issue of public interest, which may override in certain cases, the confidentiality interests. However, it is necessary to define those considerations.
- I hope that national debate on the subject will trigger a rethinking among all concerned, so that a truly empowering legislation follows soon enough. It is recognized that no Act can address the interests of all actors sufficiently. At the same time, the interests of the weak, unorganized and unattached innovator must take precedence in the spirit of the 'antyodaya'.



Anil K Gupta

Weaving Uninterrupted: How Formal System Yielded to Informal Yearning

This is an extraordinary story not because Shanmugam solved a small technical problem and generated low cost high efficiency solution for many weavers. It is extraordinary, also not because a young wage labourer managed to seek admission in Diploma and then Degree Engineering course, because his talents impressed the gate keepers. It is extraordinary because a lab attendant saw the merit of a quest in the eyes of a young boy. The Principal then tested the talents of Shanmugam, a school passout with very average marks. Impressed by his talents he decided to offer him admission in Diploma Course without fees or donations and that too in Second Year directly. National Innovation Foundation awarded him in 2007. As if this was not sufficient, he wrote to the Chief Minister of Tamil Nadu seeking admission in Degree course of Engineering. And within a few weeks, Chief Minister's office not only communicated him the news of his admission in one of the best textile engineering colleges without fees but also with fellowship. How many such examples do we have in our educational system, when somebody's talents will let authorities make exception and that too for a labourer having no recommendations (except of an attendant) or connections? We salute the lab attendant, the Principal and even the Chief Minister of Tamil Nadu for recognizing the need to nurture innovative talent. We request readers to send us more such stories, in which innovators have been recognized beyond normal expectations by the formal system: Ed.



S. Shanmugam

S/o K Subramaniam, Pavadi Street ,
Chinnappampatty Post, Omalur, Salem 636 306
Tamil Nadu

Background

Shanmugam (28 yrs) hails from a weaver's family in Chinnappampatty village of Salem district, Tamil Nadu. Around two hundred families in this village earn their living by weaving and agriculture, growing cotton, sorghum and millets. He has an elder sister who is married and a younger brother, now a Diploma in Textile Engineering, working in the field of Textile Marketing. Since childhood he had an active interest in reading books rather than playing games and spent most of his free time in the village library.

His father, owned only one handloom to weave saris. He used to help his father and in the process always think about various ideas by which the loom could be improved. But he could not do much. After passing Higher Secondary, he was put as an apprentice with his uncle on daily wage basis. His uncle had 15 power looms. Here began his experimental journey. He worked with his uncle for three years. Most of the experiments he did were without the knowledge of his uncle. He would often repair the power loom whenever there was a problem. He never let the productivity decline and thus his uncle relied on him fully.

One of the problems he noticed was the need for an additional person to refill the shuttle with pirn windings of yarn. One pirn would have 1000 meters yarn for lateral movement or weft insert. He not only solved this problem but also got entry in Diploma College, and later degree college, all due to his talent.

Genesis

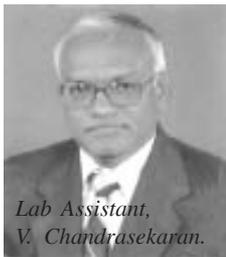
He started experimenting at his uncle's power loom without his knowledge. Though he saw many failures yet he made sure that the



*Alamelu & Subramaniam
(Parents)*

productivity was not compromised because of his experiments. He managed to repair whatever problem occurred, either due to his experiments or otherwise. Four years ago, SSM Institute of Textile Technology advertised in a local newsletter, about a training program in yarn dyeing under the Community Polytechnic Scheme. Shanmugam was interested in learning about new advancements in the textile industry. He applied for this six months long training program. There was no fee and the Institute bore food and travel expenses. Trainees were expected to stay in the hostel. His village was fifty km away from the college.

During the training, one day, he went to the weaving lab after his lunch and he started chatting with the Lab Assistant, V. Chandrasekaran. During their chat Shanmugam shared his thought to modify continued weft insertion system in power looms. Chandrasekaran was impressed with his innovative mind and took him to



Lab Assistant,
V. Chandrasekaran.

the Principal the same day. Shanmugam presented his ideas to the Principal and HOD of weaving department. Initially, they were skeptic and did not accept his ideas. Somehow, he convinced the Principal

to give him two days to prove his concept. Having got the permission, and the workshop facilities, he started improvement efforts in an old power loom, meant for training in the lab. He successfully proved his technique within one and a half day's time. In ordinary power looms, one has to change the weft yarn frequently, but by adopting the two weft cones with one pirn, one can weave up to 1000 m fabrics without changing the pirn windings.



Principal
R. Muthusamy

Breakthrough

Acknowledging and appreciating his innovative thinking, the Principal offered him direct admission in the Second Year Diploma course in textile technology. Though he had low marks in Higher Secondary, the college offered him the free seat from management quota. He was also allowed to start his work on the innovation as an academic project work, which otherwise is allowed for the final year students only.

Like Shanmugam, his younger brother was also working as a daily wager at their uncles' power looms after finishing school. Shanmugam's parents got excited with the offer by the SSM Institute of Textile Engineering, and they decided to educate their second child too in the same college. Later, Shanmugam's brother also got admitted in the same college and completed his Diploma. He is working as Marketing Engineer in a Coimbatore based Textile Company.

Shanmugam passed the Diploma exam with first class marks in 2007. In June 2007, he began his Engineering Degree with direct admission in second year, given normally to all Diploma students. His innovation was forwarded to National Innovation Foundation by the Principal of the college through Mr P Vivekanandan, SEVA, Madurai, a senior collaborator of Honey Bee Network. Accordingly it was documented for NIF's fourth biennial competition under students'

category. Shanmugam was awarded with National second prize under general category (not just the students' category), by former President of India, Honorable Dr APJ Abdul Kalam at NIF national award function, 2007.

Later Shanmugam was interviewed by media and also felicitated by the local news papers and TV channels. Soon after, Shanmugam wrote a letter to the Chief Minister requesting admission through a free seat under B Tech program. He received not only an appreciation letter from Tamil Nadu Chief Ministers' Personal Secretary but also an offer from the Tamil Nadu Government to support his further studies. The letter from the Chief Secretary to Director Technical, Education made a special reference to NIF award and included recommendation for his admission in one of the best private colleges, PSG College of Textile technology, Coimbatore. Accordingly, he was offered a loan of Rs. 45,000/- without interest, to be paid after getting job. The government also offered him a job in Tamil Nadu Handloom Weavers' Co-operative Society (Co-optex) as R&D Engineer even before completing the degree.

Mr Shanmugam also applied for Kishore Vaigyanik Protsahan Yojana (KVPY) 2008, a National Fellowship by Department of Science and Technology for students interested in research and got selected for the same. His life has now taken a very positive turn.

Innovation

With Shanmugam's technology, all shuttle looms can be modified in such a way that weft can be inserted continuously without frequent pirn change. Yarn from dobby (source of yarn hanging on the top of the loom) through two cones could now be drawn into single pirn without refilling the shuttle frequently. The weft thus



would work up to 1000 meter continuously. Earlier, the pirn had to be refilled every five minutes.

Two weft cones stands are provided on the sides of the loom and they are specially arranged so that they have the capability of controlling yarn tension and electronic weft stop motion. The yarn from the pirn is only used to bind the weft taken from the cones, by doing so the expense on pirn winding is reduced. In this method weaving takes place by two weft threads so that the fabric is dense. Only the cones have to be changed. There is no frequent need to change the pirn up to one thousand meters as in rapier looms. Fifty per cent of the total warp

Have you ever tried to listen to the wisdom of your grandparents? If so, share with us something inspiring, interesting and intriguing. Selected insights will be published along with the photographs of your grand parents. Other ideas are also welcome. Ed.



threads are lifted at a time and the remaining 50 per cent is kept down for the first pick and for the next pick the system is reversed. The heald frames are connected to dobby in such a manner that there is no collision in between the healds. The dobby mechanism can be used to select the weft colours as and when required. An additional hole is made in the shuttle to give proper tension of pirn threads which interlock the pirn from the cones.

Manpower and time needed for weaving have been reduced considerably because of obviating the need for frequent pirn change. New loom is less expensive and the maintenance can also be done easily. Half of the fabric could be weaved with one colour and the other half with a different colour, by keeping two different colour threads on both sides of the cones. By providing more



number of cones of different colours at the feeding end (selection of weft colours by dobby) a striped or checked patterns could be weaved without drop-box mechanism. For wider looms this method is very much suitable. Small sectors in the country can increase their fabric production without any additional expenses. One can weave fabrics like cotton, rayon, polyester, and silks using this method in normal plain power looms.

About 15 to 20 per cent productivity has improved in terms of saving of time for weft replenishment. Further, fabric quality obtained from this innovation is very good

due to very few stoppages for weft replenishment. Coming from a weaving background Shanmugam wants to develop many more low cost technologies for traditional weaving community so that they

can upgrade their life style. It seems that Government, for once, has made no mistake in spotting the talent, and responding to his career growth. It is to be hoped that he will continue with his creative and innovative pursuits. 

Inspirations Personified

Shanmugam's success is a tribute to optimism and spirit of struggle among the grassroots innovators - so rich in knowledge but so poor in resources. This mention would be incomplete without appreciation for the 'resourceful' people who went out of their ways to ensure that Shanmugam gets his due recognition, position and respect.

Modest Beginning

Shanmugam's father worked as a weaver, earning a paltry sum of Rs 500-1000 per week. His mother is a housewife and rears animals. After his schooling, in order to assist his family financially he started to work at his maternal uncle, Mr Kannan's power looms at the compensation of Rs. 100 per day in the same village.

Innovative Spirit

From a very young age Shanmugam lived on the concept of 'What, Why and How' and reflected signs of determination and power of thinking. He was always interested and participated in Science and Technology related programmes. He started learning the techniques of power looms since the age of 13 years so much so that within 3 years he became an adept in it. An innovator would always and everywhere be an innovator. Shanmugam tried his hands at agricultural experiments also!

Defining People

A boy who had to start earning after schooling managed to do Diploma and then B.Tech. The credit of his success goes to his perseverance as well as to the compassionate people who helped him in the following ways:-

- Mr V P Chandrasekar, Lab Assistant: Encouraged and helped him to show his talent to the Principal
- Mr Muthusamy, Principal: Gave him admission and fellowship
- College Authorities: Provided him a free Desktop Computer
- Teachers: Sponsored money, books and memento.
- Kannabiran Mills, Coimbatore: Sponsored him Rs.5000/- and offered him a Supervisor job in company
- Mr Karthick Madhavan: Hindu reporter from Erode published an article on him
- General Manger, Canara Bank, Coimbatore: Opened an account for him and deposited Rs.200 as opening balance on his behalf.
- Mr Vishwanath Shekawath, Textile Secretary and Joint Secretary: Helped to take his case to the Chief Minister
- Chief Minister and His Personal Assistant: Helped him in getting admission to B Tech.
- Mrs Nirmala, I A S, Managing Director, Co-Optex offered Rs.47,000 as scholarship
- SEVA helped in documenting his story.

Hum s s s s s s s

લોકસર્વાણી

Loksarvani

(Gujarati version of Honey Bee)

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19201 Bark of Khakhara, Jambu and Sag for Diarrhoea

To cure animals suffering from diarrhoea, Rathava Jatanbhai Bhalubhai follows a traditional method using bark of *khakhara* (*Butea monosperma* (Lam.) Taub.), *jambu* (rose-apple, *Syzygium cumini* L. or *Eugenia jambolana* Lam.) and *sag* (teak, *Tectona grandis* L.).

He takes 100 g bark of *khakhara*, *jambu* and *sag*, grinds them and soaks the mixture in one litre water for half an hour. He then filters the solution and the paste obtained is given to the ailing animals



twice a day for two days. The method has no side effects.

Rathava Jatanbhai Bhalubhai, Patiya, Taluka Pavi Jetpur, Distt. Vadodra.

The anti-diarrhoeal potential of the ethanolic extract of stem bark of *Butea monosperma* has been evaluated using several experimental models in Wistar albino rats. The extract inhibited castor oil induced diarrhoea and PGE2 induced enteropooling in rats; it also reduced

gastrointestinal motility after charcoal meal administration. (A. Gunakkunru et al, *Journal of Ethnopharmacology*, Volume 98, Issue 3, 26 April 2005, Pages 241-244)

The bark of *Syzygium cumini* is astringent and is used in sore throats, indigestion, loss of appetite, and leucorrhoea. The fresh juice of bark with goat's milk is given in diarrhoea. (http://EzineArticles.com/?expert=Robin_Brain)

19202 Bilipatra for Wounds

Wounds in animals get infested with various ectoparasitic worms. To keep the wounds clean and prevent infections, Maganbhai takes 250 g of leaves of *bili* (*Aegle marmelos* Correa.), grinds them and applies the paste on the wounds three times a day.

Maganbhai Narsihbhai Patel, Anandpur, Taluka Sankheda, Distt. Vadodara.

The leaves of *Aegle marmelos* are depurative and anthelmintic and are recommended for leprosy, skin diseases and ulcers. (http://www.nccsl.lk/ranosu/medicinal_plants.htm)

Essential oils isolated from the leaves of 'bel' (*Aegle marmelos*) have been evaluated for antifungal activity. The oil exhibited inhibition of spore germination of fungi at 500 ppm. (Rana BK, Singh UP, Taneja V. 1997. Antifungal activity and kinetics of inhibition by essential oil isolated from leaves of *Aegle marmelos*. (*Journal of Ethnopharmacol.* 57(1): 29-34.).

19203 Kukadvel for Anestrus

Anestrus in animals may occur due to internal body heat, deficiency of minerals or reproductive diseases.

This is a common problem in Gujarat. To cure this, Rabari Zebarben uses fruit of *kukadvel* (*Luffa echinata* Roxb.).

It is a creeper with yellow flowers, mainly growing during the rainy season. Zebarben gives five



kukadvel fruits to the animal along with thick *rotlo* (flat bread) twice a day for 7 to 8 days.

Zebarben learnt this technique from her forefathers and has administered it many times with positive results.

Rabari Zebarben Dhanabhai, Sujpura, Ta. Detroj, Distt. Ahmedabad.

Zebarben is 75 years old. She has six sons and all are farmers.

Extracts of *Luffa echinata* exhibit a considerable inhibition of lipid peroxidation and possess hydroxyl radical scavenging activity. (Prashanth Kumar V; Shashidhara S; Kumar M M; and Sridhara B Y, INIST-CNRS, Cote INIST : 984, 35400008883531.0170)

19204 Potato for Corneal Opacity

When animals suffer from corneal opacity, eyes become cloudy white, water frequently, the animal has

difficulty in opening eyes and has inadequate vision.

To cure this problem Ishverbhai takes a potato (*Solanum tuberosum* L.), rubs it on a clean stone and collects the juice. He filters the juice through a cheese cloth and administers it into the eyes of



the animals twice a day for 7 to 10 days. The method has no side effects.

Ishverbhai Dahyabhai Patel, Amirgadh, Taluka Amirgadh, Distt. Banaskantha

Ishverbhai is 33 years old. He is an animal healer and has gained this knowledge from his forefathers.

Potatoes contain a number of important vitamins and minerals including vitamin C and B6, potassium, thiamin, riboflavin, folate, niacin, magnesium, phosphorus, iron, and zinc, and are known to have a large number of therapeutic effects. (<http://www.press.tv.ir/detail.aspx?id=35820§ionid=3510210>)

19205 Chanothi for Bloat

Characteristic symptom of bloat in animals is swollen abdomen, which sounds like a drum when gently tapped. The animal becomes restless, has difficulty in breathing and stops chewing.

To solve this problem, Lakhabhai uses *chanothi* (*Abrus precatorius* L.). He takes 50g of seeds of *chanothi*, grinds them, and then mixes this powder with 2 litres of water and gives the concoction to the animal. He claims that the method cures bloat in 20 minutes. However, he repeats the process if positive results are not obtained within an hour.

Lakhabhai Nagjibhai Desai, Amarapur, Taluka Mansa, Distt. Gandhinagar.

*The seeds of *Abrus precatorius* are considered abortifacient, anodyne, aphrodisiac, antimicrobial, diuretic, emetic, expectorant, emollient, febrifuge,*

hemostat, laxative, purgative, refrigerant, sedative, vermifuge, antidote and used in various ailments to cure headache, snakebite, blennorrhagia, boil, cancer, cold, colic, conjunctivitis, convulsion, cough, diarrhoea, fever, gastritis, gonorrhoea, jaundice, malaria, night-blindness, ophthalmia and rheumatism. The seeds are also used to treat diabetes and chronic nephritis. (<http://www.disabled-world.com/artman/publish/abrus-precatorius.shtml>)

19206 Herbal Fertilizer for Mango

Very often, mango trees tend to dry out due to a disease locally known as “*Bandi*” and consequently flowering is considerably reduced. Insect attacks during fruiting also result in loss in yield and profit.



He has been trying hard to find a solution for this disease for the last 15 years. Fellow farmers used compost and DAP for this disease but did not get desired results. Karmasibhai thought that non-bearing and sick trees can be saved by the use of materials that emanate heat. So he developed an affordable method through in-depth observation and experimentation. He prepared herbal fertilizer by mixing *ankola* (*Alangium salviifolium* (L.f.) Wang) and some other specific herbs with honey, ginger and salt which when applied to mango trees gives good results. Following this idea, he started using this mixture five years ago. In the first year, he applied this mixture on one such tree and he

observed good flowering in next season. In the second year, he followed this practice in the half portion of his farm and got the same success. Finally he adopted this method in his entire farm. As a result, he got around 13 quintals of mango, compared to around 4 to 6 quintals in the past. As a cure he applies 500 g of this mixture per tree three months after harvest and once a year. The dose can be increased as per requirement. 300 g of this mixture can be applied to trees that are less than 10 years old without any side effects.

This practice considerably boosts the flowering and also decreases the incidence of “*madhiyo*” disease. The quality of fruits also improves.

Karmasibhai Kurjibhai Ajudia, Hadmatiya, Taluka Talala, Distt. Jungadh

Karmasibhai is 60 years old and owns 5 vighas of land. He has two sons who are engaged in farming with him.

*For increasing productivity, seeds are soaked in the paste of ‘ankola’ fruit (*Alangium salviifolium*) before sowing (Honey Bee, 9(1):8, 1998).*

19207 Lemon Flower (*nimbu*) for the Control of *Helicoverpa armigera* (Hubner) Hardwick in Pigeon Pea

Pigeon pea crop suffers significant economic damage due to *Helicoverpa*



armigera at the flowering stage. To prevent infestation by this pest, Tadv

Contd... on page 17

IN MEMORIUM



Father and Son

The Climber Who Climbs Very High

One of our most successful innovators and entrepreneurs, Mr Joseph alias Appachan from Kerala passed away on 19th July 2008 after a heart attack. He was the man behind various models of the tree climbing device. A very humble man, he was always full of zeal and enthusiasm. His father, Mr M J Joseph, also an innovator, unfortunately passed away soon after.

May the Almighty grant their soul peace and the bereaved family and friends, courage to bear the loss.



Dr C Sahasranam, Coordinator-GIAN-Karnataka cell (Professor, SSIT-Tumkur) passed away due to heart attack on 29th June 2008. Dr Sahasranam was very active member of HBN and was associated with NIF and its activities for a very long time.

May his spirit rest in eternal peace. May God bless his family with courage to bear the misfortune.

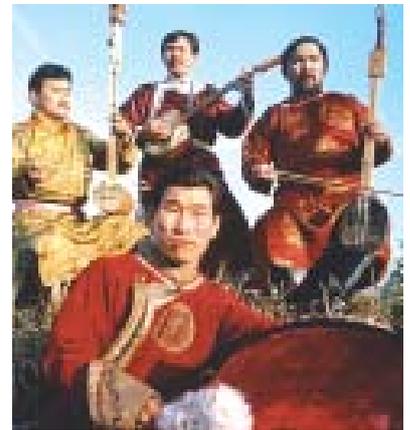
Tuvans Intrigued by Simple Innovation at Bruges

A short story by Dis Huyghe describes how a music band from Tuva, Russia, responded to a local innovation of collecting horse droppings in the historical city of Bruges in Belgium.



Early one Sunday morning in August 1992, I reached Schiphol, the national airport of Holland. Four Tuvan throat singers from the famous band Huun Huur Tu were the reason for this visit. At that time, I was working as a promotion guy for a record company. And as part of my job, I often had to pick up bands that came to Belgium to promote their album.

This story describes my first contact with the beautiful people of the Tuvan Republic, Russia. The Tuvans had traveled from their country for the first time and were stopping over in Europe. They had to stay here for two days and then leave for America to record with Frank Zappa. I knew from a Russian friend that they would be in Holland and I suggested that he should do some promotion for them and their unique style of singing.



I picked up the four and drove with them to Bruges, the medieval town in the north of Belgium, for a radio show. They seemed a bit surprised with the huge “cultural shock”. Tuvans have historically been cattle-breeding nomads, tending their herds of goats, sheep, camels, reindeer, cattle and yaks for thousands of years. They live in yurts covered by felt, and with birch bark or hide and they relocate seasonally to move to newer pastures. Their horses give them a lot of things like meat, and especially horse droppings, which is used as fuel.

I tried to make them comfortable by explaining where we were and what we would do. They spoke very little English.

“Bruges,” I said, “was the Venice of the North.” It seemed that they did not know what Venice was!

“Medieval town,” I tried again. No reaction however.

“Knight and horses,” I tried for the last time.

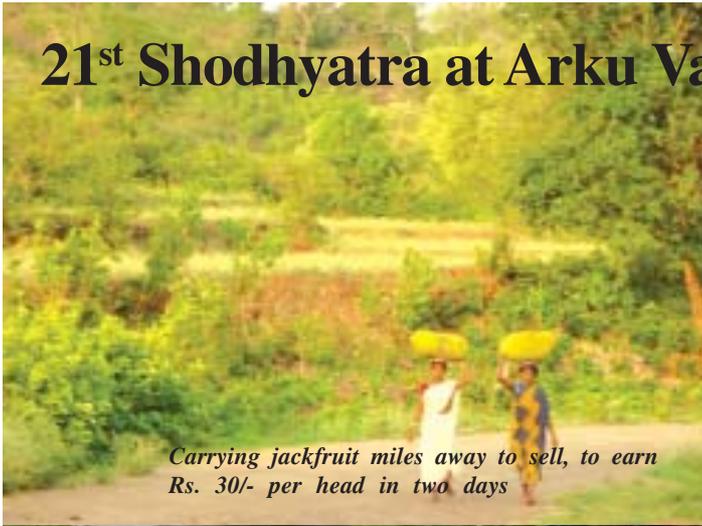
“Oh horses!!!” said the youngest of them. Now that was something they knew.

Three hours later we arrived at the venue, just in time for the sound check. I thought of taking my new friends to see the medieval city hall of Bruges, but I suddenly seemed to have lost sight of them. After a while, I located them and saw that they were taking pictures of the sack hanging behind the horse carriages to collect the horse droppings. This was apparently a novelty for them!!!

So it was here in Bruges that the horse people of Tuva entered a new millennium. Collecting horse droppings now seemed to be an easier task. The old sack became the symbol of innovation and convenience.

*Dis Huyghe
dis.huyghe@skynet.be*

21st Shodhyatra at Arku Valley, Vishakhapatnam, Andhra



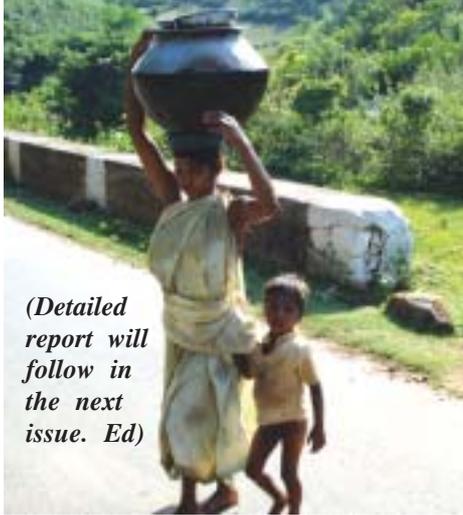
Carrying jackfruit miles away to sell, to earn Rs. 30/- per head in two days



A day's shopping at weekly market

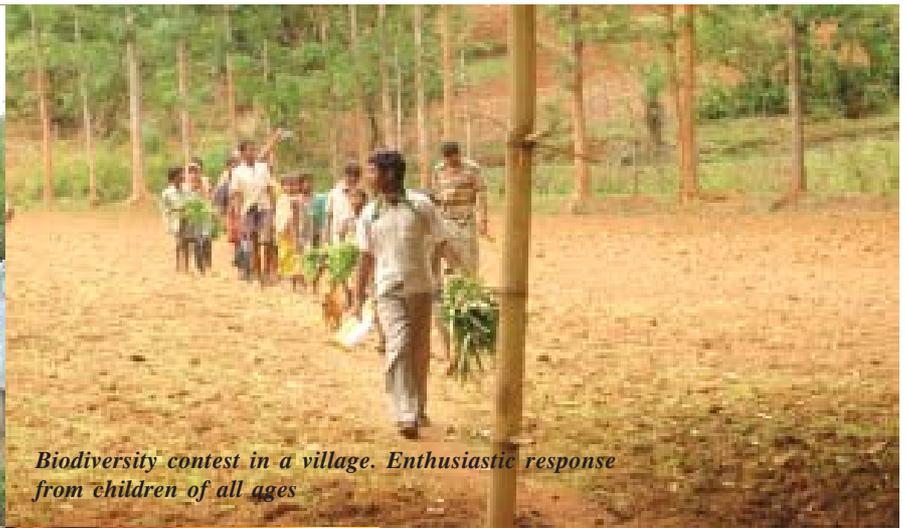


A three tier energy conservation system in Arku valley



(Detailed report will follow in the next issue. Ed)





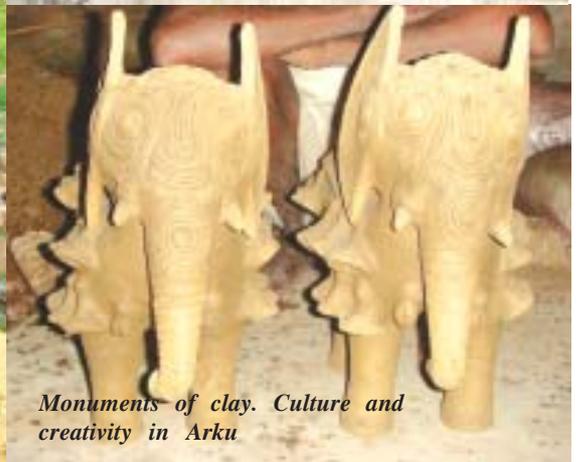
Biodiversity contest in a village. Enthusiastic response from children of all ages



Taming energy



Herbal head rest



Monuments of clay. Culture and creativity in Arku

Learning from Apes: Medicinal Knowledge for Future

Michael A Huffman, Primate Research Institute, Kyoto University, Japan

In this article, the author brings out rich practical and personal insights gained from observation of primate behaviour in Tanzania. Isn't it apt to now consider sharing part of the benefits gained from such research with the primates? Should we aim for new new bio-ethics so that the primates would be safe in their own habitat? After all, in their security lies the seeds of our health security in future: Ed.

In nature, infestation by parasites is a fact of life for humans and animals alike. Parasites cause a variety of afflictions, ranging from stomach upset to malaria, cholera, dengue fever etc., that can hinder daily activities or pose life threatening conditions. Every society in the world has its own medicinal tradition, developed from millennia of experience passed down from generation to generation. Whether it be the great written medicinal traditions of India, China and Tibet, with over 2000 years of refinement, or local home remedies passed down from mother to daughter commonly throughout the world, a significant



proportion of the world's population today still depends primarily on traditional plant based medicines for the daily treatment of illness. Antibiotic and antihelminthic resistance is an increasingly serious problem in western style health care and livestock husbandry around the world. The study of self-medication in animals and herbal medicines in humans can provide some alternative potential insights into dealing with these problems.

Given the common susceptibility to parasites we share with our closest living relatives, the monkeys and apes (primates), it should not be surprising that they too have some similar means of dealing with parasites and other health

threatening diseases. Research into this area is relatively new. Beginning in the mid-1980, convincing evidence from study on chimpanzees, support the idea that self-preservation through self-medication does exist in primates.

Primates Not Alone

Primates are not the only non-human species which use medicine. Where could this all have started? In the plant kingdom, a common line of defense is to produce a variety of toxic secondary compounds stored in the leaves, fruits and barks of some species to prevent predation by animals. This is what makes some plants bitter or otherwise unpalatable. At some point in their co-evolutionary history, probably starting with the insects, animals began to take advantage of the plant kingdom's chemical arsenal to protect themselves from predators and parasites and to enhance their own reproductive fitness. In insects, for example, adults of both sexes of some species of butterflies utilize an alkaloid for defense against predators and males of the species have been shown to depend on it to help synthesize a pheromone needed for courtship! The monarch butterfly feeds on specific plant species containing cardiac glycosides, which make birds sick, conditioning them not to feed on the butterfly. Such three species level interactions are likely to have provided the foundation for the evolution of a more sophisticated level of self-medication seen throughout the animal kingdom today.

Interestingly, ethnographic literature and recent ethnomedicinal research suggest that people belonging to traditional societies throughout the world have long been aware of the use of medicinal plants by animals and have looked sometimes to them for clues about the medicinal properties of plants.

Primates, People and Parasites

In the course of my research on wild chimpanzees in Tanzania, I was fortunate enough to provide the first scientifically reported evidence that animals ingest medicinal plants when suffering from illness and then recover. This came from my observations of chimpanzees chewing bitter pith of a plant, locally known as *mjonso* (*Vernonia amygdalina* (Compositae)) by the WaTongwe people in western Tanzania. While ingesting the pith from the young shoots of *mjonso*, chimpanzees remove the outer bark and leaves to chew only on the inner pith, from which they extract the extremely bitter juice. We later found that the bitter compounds in the leaves and bark contained very toxic substances that inhibit most insects and other animals from eating it. Mature chimpanzees in proximity to sick individuals chewing *mjonso* bitter pith show little or no interest in ingesting the pith, as they seem to know that it is used for medicine. Infants on the other hand try to taste the pith discarded by their ill mothers. In this way, the young get their first exposure to both the sick behavior of their mothers and her ingestion of the extremely bitter tasting plant.

Chimpanzees, and indeed most animals, do not directly teach their offspring what to eat, rather the young learn by watching and trying for themselves what their elders eat.

The fact that we share medicinal practices with animals is obvious from the following example *V. amygdalina* is used by many African ethnic groups across the continent as medicine. This plant is prescribed as a treatment for ailments such as malarial fever, schistosomiasis, amoebic dysentery, several other intestinal parasites, stomachaches and a variety of other diseases. The chimpanzees, who share the bounty of the forest with these ethnic human populations, too use this plant as a treatment for intestinal parasites, diarrhoea and stomach upset.

Land to Lab: Validation

Chemical analysis of *mjonso* samples collected at Mahale from plants used by chimpanzees revealed the presence of two major groups of bioactive compounds. We confirmed the presence of 4 well-known compounds (sesquiterpene lactones)



found widely in other *Vernonia* species, and commonly used for their antihelmintic, antiamoebic, antitumor, and antibiotic properties. *Vernonia* species have been studied for nearly a century, so it was most surprising to us when we discovered 13 totally new compounds! This happened because we looked to chimpanzees for their knowledge of medicine and how to treat illness.

The compounds in the pith had never been studied by scientists before, because the human populations they had studied only used the leaves, bark and roots, the parts that chimpanzees avoid. *In vitro* laboratory tests of the pith's compounds showed significant activity against the parasites responsible for bilharzia, malaria, leishmania and amoebic dysentery.

The ethnomedicinal uses of *V. amygdalina* and the conditions under which ill chimpanzees have been observed to ingest this species are similar in many respects. In the cases where I documented the use by chimpanzees, the rate of recovery (20-24 hrs) was comparable to that of the local human inhabitants (within 24 hrs) who use *V. amygdalina* for the treatment of parasites and gastrointestinal upset. The evidence suggests that chimpanzees ingest *V. amygdalina* when they experience some of the same symptoms of illness as humans, indicating that both human and chimpanzees respond to similar physiological cravings because of their illness. From an ethnobotanical viewpoint, the greater number of different cultures that recognize a single plant species as having some kind of medicinal property, the more likely that species is to contain significant physiological activities. The example of *V. amygdalina* with its widely recognized medicinal value in Africa takes this one step further by bridging the gap between apes and humans.

Knowledge Partnerships

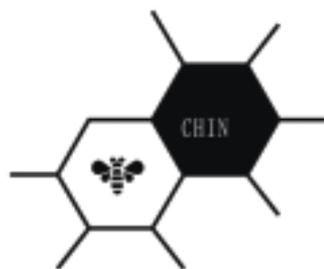
A key collaborator in my 20 years of research at Mahale is Mr Mohamedi Seifu Kalunde, Game Officer, Tanzanian National Park. Mohamedi comes from a long family line of traditional healers. During the course of this collaborative work that started in 1987, he provided exhaustive information about the medicinal plants used by the WaTongwe people, some of which are also found in the diet of chimpanzees in the Mahale M group. This information has provided significant insights into the origins of some of the WaTongwe's most important medicinal treatments notably acquired through the observation of sick wild animals.

Lastly, I would like to share another of many examples that exist in nature.

An important medicinal plant for the WaTongwe is '*mulengele*' (*Aeschynomene* sp. L., Fabaceae). The medicine was first discovered by Mohamedi's grandfather, Babu Kalunde, as a treatment for diarrhoea with blood, by watching a sick young porcupine ingest the roots of this plant and recover from these symptoms. *Mulengele* had never been used as medicine before; rather it was known widely and avoided because of its highly toxic properties. He observed that the porcupine's condition improved over time and became convinced that he could try it on his sick patients. He told the villagers what he had seen and advised them to use it. People were reluctant because everybody knew it was poisonous, but eventually they agreed. The medicine successfully cured many people in the village. Since then the plant has become an important medicine of the WaTongwe in western Tanzania. Mohamedi also has experimented with the plant and has found it effective against common STDs. Recently other traditional healers in western Tanzania have begun to use the plant's roots to treat secondary infections in AIDS patients. A laboratory investigation is needed to determine the types of compounds present in the roots and to check their pharmacological properties.

A closer look into the ways adopted by the wild animals for the use of herbal plants may provide further insights into ways of treating disease in livestock and human in the tropics. This multidisciplinary approach, combining science, ethnomedicine and animal behavior, can bring about a rich understanding and appreciation of the value of cultural and biological diversity for the future of humankind. An ultimate objective of this research should be to integrate the results into local health care and livestock management systems so that locally available plants can be properly used for the benefit of all. 

Stalks in a Pit Keep Carrots Fit



This is the fourth installment of grassroots innovations from China pursued by Team-Chinese Innovation Network (CHIN), a sister network of Honey Bee Network family based at Tianjin University of Finance and Economics (TUFE). Readers will notice that many problems are common, not just between India and China, but also in other parts of the world. But why has diffusion of such knowledge, innovations and practices been so difficult in this age of globalization? How do we promote lateral learning across local communities around the world?

Contributors: Prof Zhang Liyan (liyan_zhang_666@hotmail.com) along with her team comprising Bian Cuilan, Zhou Yongjun, Zhang Jiayu, Nv Lei, and students - Yang Peipei, Zhang Xiaoxu, Feng Tian, Du Wenting and Shang Xuebin, Dr Zhang Wei and other senior officials of TUFE.

A Machine for Peeling Gingko (Nut from the centre of the inedible fruit of the Maidentree, used for cooking)

Luo Zeyao
Pizhou Jiangsu Province
Scout: Yang Peipei

Conventionally gingko is peeled by hands. But the method is time consuming and not very efficient. Mr Luo Zeyao has developed an electric machine to peel gingko. In the machine, there is a very thin and long knife which rotates continuously, and thus the flesh is peeled off the gingko. The work is done not only at a fast rate, but it is also very convenient.

The patent no. WO03070028 (Ryu Keun-Won, 2003-08-28) discloses a machine for peeling gingko nut, consisting of a space between a driving roller and a rack roller each having spiral grooves,



a flesh of gingko seed is discharged through the space between the driving roller and the rack roller, and the seed is discharged to a seed outlet by moving the seed along the driving roller and the rack roller.

Machine for Drying Sunflower Seeds

Wei Lei
Pizhou Jiangsu Province
Scout: Yang Peipei

The seeds of the sunflower are conveniently dried in a machine. The washed seeds of sunflower

are put into the machine on different platforms. The machine uses electricity to generate heat, which dries the seeds. It consists of a handle to stir the seeds continuously so that the seeds are heated and dried from all sides uniformly.

The patent no. UA14956U (Vitaliiovich et al, 2006-06-15)



reveals a sunflower seed dryer consisting of a welded frame, fans, air ducts and working units, infrared radiators, sieves, diffusers, inlet and outlet spouts. It works on the principle very much similar to the one described in the above invention.

Improvement in the Plough

Huangzhong County, Qinghai Province, Wu Zhuang

This is a modified plough with a metallic triangular frame. The frame comprises spike-like protrusions and is fitted on to a tractor for ploughing purpose. It is used for ploughing hard soil.



Improved Hoes

Han Guan Le
Laizhou City, Shandong Province, Disabilities Town Tan Village
Scout: Han Feng

This is a hoe that is attached to the front half part of a bicycle. Only the front wheel and the handle of a bicycle are used. Thus a broken bicycle is put to use, while at the



same time making hoeing an easy, less energy consuming job. There are many such agricultural implements that use one or the other part of a bicycle to save energy.

Shri Gopal Malhari Bhise, a farmer of Shendurin village situated in Janner



Taluka of Jalgaon District, had fixed a rod with a blade at the end, to an assembly consisting of only the front-wheel and the handle of a bicycle. He has named the assembly as 'Krishiraja', and claims it to be extremely efficient in removing weeds from hard land (*Honey Bee*, 11(4) & 12(1): 15; 2000-2001).

Radish Preservation in Winter

Pingyin County, Shandong Province Town, Takanao Tian Yan-Ting Liu Guodong.

This is an innovation for keeping the carrots fresh in winter. First an area, in land which can hold



moisture is chosen. A pit is dug and carrots are put inside it. The pit is then completely covered with soil. Dry corn-stalks are then inserted into the pit. Corn-stalks are hollow inside and thus would aerate the carrots stored and keep them fresh.

To preserve carrots they are buried in lightly moist sand in an underground cellar or stored in the garden in a pit insulated with straw. Under proper storage conditions, carrots remain fresh for four to six months. (<http://www.urbanext.uiuc.edu/veggies/carrot1.html>); Dudhabhai Arjanbhai Pandav of Genol village in District Ahmedabad follows a special method to preserve wheat. Approximately 2-3 feet deep pits are dug in the house/store room. The bottom of the pit is covered by a thin layer of wheat husk and filled with wheat. Each layer of wheat is alternated with a thick layer of husk and finally covered by soil (*Honey Bee*, 3(1):13, 1992).

Making Coal from Straw

Chen Hong Wei
Zhou Kou City, He Nan Province

Coal is formed from lumbers at high-temperature, high-pressure and anoxic conditions. Chen Hong

Wei, a peasant, has developed a technology to make coal and coal balls from straw, bamboo and lumber. He has spent three years on research, and has conducted hundreds of experiments based on the law of conservation of energy, using chemistry additives under artificially controlled conditions to finally develop the technology. He has named it Solidified Molding Technology.

The patent no. CN1944601 (Shen Changbing, 2007-04-11) is a complex catalytic physical and chemical process of coalifying stalks. The process includes the following steps: forming coalifying apparatus; spreading stalks with catalyst; igniting while spraying cold water for carbonizing the stalks into charcoal; mixing the charcoal, potassium dichromate, and water to form artificial coal; and forming to obtain environment friendly fuel. The coalified fuel may be used widely in industry and household.

Fly Catcher

Hu Xilin, Manager of an Air-conditioner Company
Yuyao City, Zhejiang.
Source: Hua Shang (morning newspaper, 2004-07-08)



Ten years back Hu Xilin was having dinner with a client, and a big fly was found in the food just before the deal

on a huge contract was about to be closed. The client got upset and left. Hu was determined to develop a design to catch flies. Thus began his efforts to innovate something.

The machine innovated by him emits sound waves which attract flies from a certain distance. It comprises rollers covered with fly killing solutions. Following the sound waves the flies fly into the rollers and get killed. It took Hu more than 10 years to develop this machine and it has helped in killing millions of flies.

A wide variety of electronic fly catchers are available in the market, of particular interest is an electronic fly-swatting device based on the idea of the Venus fly trap.

(<http://www.eurocosm.com/Application/Products/Flyc/flyc1GB.asp>) 

Contd... from page 9

Jethabhai Virabhai uses flowers of lemon (*Citrus limon* Burm. f.).

According to him, a paste of around 100 g of flowers of lemon is mixed with 15 litres of water to make a solution. The solution is applied to the crop twice a week to obtain good results.

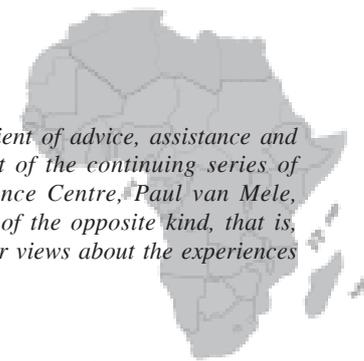
This method is quite famous among the farmers in his region. The only drawback is when applied in more quantities negative effects may be observed. More over care should be taken that the mixture should not fall into the eye while spraying.

Tadvi Jethabhai Virabhai, Aka Kheda, Taluka Sankheda, Dist. Vadodara

The active ingredient d-Limonene found in citrus oils kills many flying and crawling insects on contact by destroying the waxy coating of the insect's respiratory system. With their respiratory systems damaged, the insects basically suffocate. (<http://www.weekendgardener.net/organic-pesticide/lemon-120712.htm>) 

Ants, Termites and Safe Houses

In the discourse on international agricultural development, Africa is often seen as a recipient of advice, assistance and aid. Technological solutions are supposed to be brought from outside. In the third part of the continuing series of innovations and traditional knowledge of African farmers documented by African Science Centre, Paul van Mele, technology transfer agronomist (p.vanmele@cgiar.org), provides many more experiences of the opposite kind, that is, where other countries can learn from African farmers. Readers are requested to share their views about the experiences given here.



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.

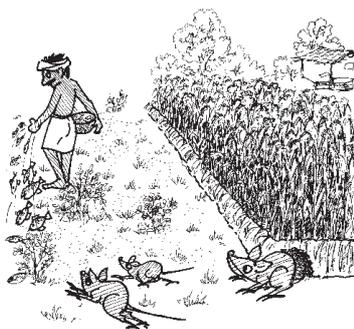
At the end of three years, the infestation reduced considerably. Neighbors noticing Moussa's success adopted it and ever since, it has become a common practice in the area.

Biological control agents integrated with other methods can increase and/or improve site-specific weed control. A study reports that controlled burns can aid establishment of biological control agents in marginally suitable environments for effective weed control, but timing of the fire must be well coordinated. (Rodney G. Lym, Biological Control, Volume 35, Issue 3, December 2005, Pages 366-375)

Distracting Rats using Dried Fish

Gilbert Dembele is a farmer of Zeguesso and member of PLAR-IRM (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.



Use of dried fish as baits for rats is a common practice in various parts of the world. (http://www.cd3wd.com/CD3WD_40/VITA/GRAINENM/EN/GRAINENM.HTM)

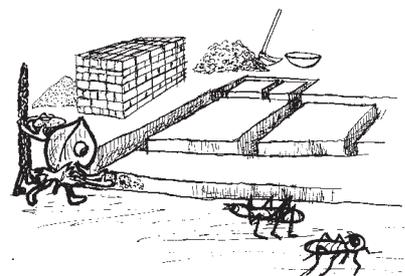
Struggle Against Termites

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.

A study suggests that ants could be used in an integrated management strategy for termites in smallholder maize cropping systems. (B Sekamatte, M Latigo, A Russell-Smith; Crop Protection, Volume 20, Issue 8, September 2001, Pages 653-662)

b) Use of tobacco

For many years, farmers in Builsa had not been able to avoid termites destroying their houses and crops.

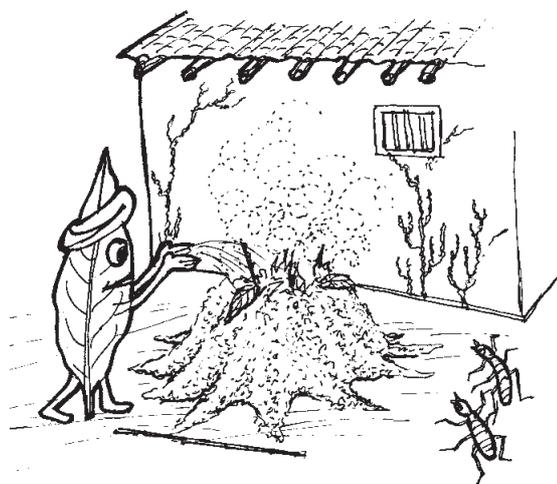
Mr Awendayie is about 48 years old and has been farming since he was 20 years old. He grew up nearby a termite hill, 10 m away from their compound. "The ants used to get into

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.

Farmers of Dandava (Distt:Surendranagar) collect residue of tobacco after harvesting. This waste material of tobacco is incorporated into the soil to control termite (Honey Bee, 3(1):15, 1992).

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 rice-based 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.

Field experiments conducted at the Bangladesh Rice Research Institute, Charbadna farm, Barisal, from 'boro' (winter season) 2001 to 'aman' 2002, revealed that the photoperiod-sensitive rice varieties could be planted in the early 'boro' season and the ratoons from this crop produced a good harvest. After harvest of 'boro' crop the ratoons, coming out from the remaining straw and base of the hills, were allowed to grow and in the succeeding 'aman' a good harvest was obtained from those ratoons. This can be adopted as a low-cost rice cultivation technique in

those areas, where crop establishment in the transplanted aman season is somewhat difficult due to early intrusion of tidal water in the field at the end of boro season. (B C Roy, M A Hossain and M A Rahman; Pakistan Journal of Biological Sciences 7 (3): 368-371, 2004)

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 Sosu 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.

Prenylated flavanones isolated from the hexane extract of Phyllanthus niruri were found to have nematicidal activity against root-knot as well as reniform nematodes (N A Shakil, Pankaj, J Kumar, R K Pandey, D B Saxena; Phytochemistry, Volume 69, Issue 3, February 2008, Pages 759-764). A similar activity may be expected from Phyllanthus discoïdes, however it needs to be experimentally confirmed.

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.

Leaf powder of Hyptis suaveolens (L.) has been found to have fungicidal activity and maintain a high germination percentage of the soybean seeds over a storage period of 6 months (Y L Krishnamurthy, J Shashikala, B Shankar Naik; Journal of Stored Products Research, In Press, Available online 13 June 2008). The same may be expected from the species spicigera, however it needs to be experimentally confirmed.



NATIONAL INNOVATION FOUNDATION, INDIA

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

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 the form of 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.

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 **Sixth National Competition started on February 1, 2007 and entries would be accepted till January 31, 2009.** 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
E-mail: campaign@nifindia.org; www.nifindia.org

Co-sponsors



Honey Bee Network



CSIR



SRISTI



IIM-A

Technology Commons: A Lateral Learning Workshop

Copying, improvement and blending of local innovations with one's own ideas is quite common

at grassroots level. In fact, a process like this has been at the heart of culture of innovation at community level. Honey Bee has always supported the IPR rights of the grassroots

knowledge holders and innovators. At the same time, it is true that majority of the innovators want to share their knowledge openly with others. But some may not. There are tensions at times. Riya Sinha as a part of her Ph.D thesis has studied the innovation by Mansukhbhai Jagani involving an attachment of a ploughing machine (multi purpose tool bar, also called as Saanti). She has also looked at lot of imitations and improvements in this motorcycle driven Saanti. NIF and GIAN took the initiative to organize a workshop to test the ideas emerging from the original innovator as well as those who copied and improvised Mansukhbhai's design.

About 30 innovators, users and another 20 stakeholders met at Community Science Centre, Rajkot to discuss these issues. Many improvisers brought their devices for the lateral learning workshop. Shri Anil Kamdhar, Trustee of Community Science Centre hosted the workshop and offered the Centre as a place for continuing dialogue on policy and practice. Innovators critiqued each other's design, offered solutions and appreciated innovations. The entire exchange took place in a very collegial environment with no inhibition about one's proprietary interest in the technology. It is this culture of communitarian spirit that Honey Bee Network wants to nurture. At the same time, the creativity of individuals and innovators' networks has to be recognized. The concept of 'technology commons' was proposed for debate. It implies that there should be no restriction on people to people learning, imitation and copying, so long as the technology improves, the sharing is mutual and the farmers and other consumers are able to get better solutions at lower cost. A community of these improvisers will constitute the concept of 'technology commons'. They will collectively own the IPRs and none of them can individually license it to a third party.

Contd... on page 23

Experiment Demonstrates 110 Years of Sustainable Agriculture

An agricultural experiment on a plot of land on the campus of Auburn University, United States, shows that 110 years of sustainable farming practices can produce cotton crops similar to those using other methods.

In 1896, Professor J F Duggar at the Agricultural and Mechanical College of Alabama (now Auburn University) started an experiment to test his theory that sustainable cotton production was possible on Alabama soils if growers would use crop rotation and include winter legumes (clovers and/or vetch) to protect the soil from winter erosion.

Today, his experiment on the campus of Auburn University is the oldest, continuous cotton experiment in the world and the third oldest field crop experiment in the United States on the same site. The experiment, known as "the Old Rotation," has continued with only slight modifications in treatments and was placed on the National Register of Historical Places in 1988.

Researchers at Auburn University and at USDA-Soil Dynamics Laboratory in Auburn, AL, have prepared the first ever comprehensive research publication covering the entire 110-years history of this experiment.

The thirteen plots in the Old Rotation include (i) continuous cotton, (ii) a 2-years rotation of cotton with corn, and (iii) a 3-years rotation of cotton-corn-wheat-soybean. These crop rotations include treatments with and without winter legumes (usually crimson clover and/or vetch) and with and without fertilizer nitrogen.

It provides growers, students, and faculty with a living demonstration of fundamental agronomic practices that result in sustainable crop production. Long-term yields indicate that winter legumes are as effective as nitrogen fertilizer in producing non-irrigated, 10-years average cotton yields of 1,100 pounds lint per acre. Winter legumes and crop rotations contribute to increased soil organic matter. Higher soil organic matter results in higher crop yields.

In 1997, the Old Rotation entered a new era of agricultural production where boll weevil eradication, genetically modified crops, and conservation tillage almost eliminated the need for the plow and pesticides. In 2003, irrigation was added to half of each plot. Yields of cotton, corn, wheat and soybean continue to increase far beyond the yields, than during that of Professor Duggar's generation. Since initiating conservation tillage practices in 1997, all-time, non-irrigated record yields have been made on all the crops grown on the Old Rotation: 1,710 pounds cotton lint per acre in 2006, 95 bushels wheat per acre in 2001, 236 bushels corn per acre in 1999, and 67 bushels of double-cropped soybean per acre in 1997 after wheat.

Journal Reference

Mitchell, Charles C, Delaney, Dennis P, Balkcom, Kipling S A Historical Summary of Alabama's Old Rotation (circa 1896): The World's Oldest, Continuous Cotton Experiment. *Agronomy Journal*, 2008; 100 (5): 1493 DOI: 10.2134/agronj2007.0395

Source: <http://www.sciencedaily.com/releases/2008/09/80929123945.htm>

Common Goal

Susan Chacko

susan@cseindia.org

We at the Centre for Science and Environment are very much interested in the work, reflected in the issues of Honey Bee. CSE's Environment Resource Unit collects and disseminates information on environment and related issues with special emphasis on India. We have noticed that the work done at the grassroots level is not reflected in the mainstream media and thus most people are not aware of the work and the traditional knowledge that the rural habitat particularly is a storehouse of.

(We are sure that Down to Earth team also shares your enthusiasm. Keep sending feedback to us. Ed)

Urge to Connect

Meghna Shukla

meghnashukla@gmail.com

My name is Meghna Shukla - MBA with Marketing, working in the field of sales for the past 8 years in today's hectic, competitive and cut throat corporate world.

I come from the land of Kutch wherein innumerable NGO's are thriving for betterment of mankind. I had always dreamt to be one of them - but time and circumstances were never in favour. I was just going through your website and found your work to be really creative and full of initiatives. As the saying goes its never too late. I would like to offer myself for volunteer services as and when possible.

Thanks and once again hats off. Keep up the Good work.

(We are keen to welcome you to our network. Please do reply and let us explore a synergy. Ed)

Design for Self-reliance

Reinder van Tijen, Demotech

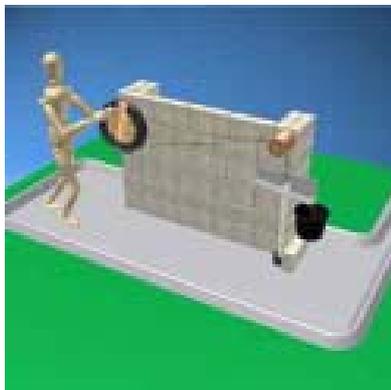
info@demotech.org

I would like to join the Honey Bee Network.

My name is Reinder van Tijen. I live in the Netherlands, Europe. I have been involved with

Appropriate Technology, since 1973. I initiated the foundation "Demotech, Design for Self-reliance".

My approach is "design for self-reliance". Main success of my



work is the widely known "Rope Pump", put to work for the first time in Burkina Faso, Africa, in 1976. I have published the results of my work on the website <http://www.demotech.org>.

At present Demotech's fieldwork center is in Guatemala, Central America. We are about to launch a campaign for making a practical as well as beautiful device for washing hands where there is no piped water.

(Many thanks for sharing such an outstanding work and that too with such a noble spirit. We welcome you to the Honey Bee Network. Your design class can certainly work on ideas developed by grassroots innovators in HBN. Please do visit nifindia.org, sristi.org and indiainnovates.com. I have no doubt that the fusion of your design skills and creative skills of our grassroots innovators will generate new options for local communities worldwide. Do keep in touch. Ed)

Young Enthusiast

Sunil Kumar Kodi

sunil972@gmail.com

I appreciate your voluminous efforts in throwing light on the till now unheard inventions. I read the article

"Grassroots Guru" in Reader's Digest and came to know about SRISTI.

I am deeply moved by your efforts and I want to do my part to introduce the inventions to the public I come across.

I am doing my Bachelors in Technology in Visakhapatnam. I visit universities during cultural and technical festivals. During these festivals, there is a sea of students from all fields visiting the campuses. So, I feel these festivals form an important platform to introduce the "inventions" to the students. Regarding this effort, I want your permission and assistance as well. My idea is to design posters showcasing the "inventions" and present them. For this I require further details regarding the inventions. I shall use the photographs of the people involved in an invention as you have done in your website.

(We trust your intentions and would encourage you to go ahead with your efforts to disseminate ideas and innovations. You can download soft copies from our websites - sristi.org and nifindia.org. Ed)

Joining Forces - Scientific Knowledge and Social Concern

Dr Preetha Nilayangode

elamon_goa@sancharnet.in

I came to know of your work from Readers Digest and had the fortune to visit the website of Honey Bee Network. I am extremely impressed by the work being carried out by your network.

I am a Plant Biotechnologist with a passion for working on conservation of nature. I have done some work on medicinal plants and their traditional uses. Promoting innovations at the grassroots level is

also one of my passions. But due to lack of proper contacts I have not been able to do much on these lines. Having come to know of your organization I would be extremely happy to contribute in any little way I can (I am based in Goa).

(Surely we will appreciate your close involvement. Please let us know how we can merge our dreams and concerns. Looking forward to hear from you soon. Ed)



Bridge with Pakistan

Abrar Habiby

samajfoundation@gmail.com

My name is Abrar Habiby and I am the president of the biggest NGO “Samaj Foundation” in Pakistan. “Samaj” means society and society of any country is the main power. I am the founder member of this organization and the aim is to solve the problems of Pakistani and Indian people and to spread love and peace in their lives. At present we have lots of responsibilities on our shoulders. The social issues in both the countries are almost the same and people of both the countries are facing the same unending problems. If we, together, struggle to eliminate them, I am hopeful that we would succeed. So I want to join hands with you to collectively work against Indo-Pak social problems.

(You are welcome, please visit our sites and send us examples of creativity by common people, we will publish these in Honey Bee and encourage them. Please advise if there is any way that we can support your work. We are very keen to strengthen your efforts. Ed)



A Pat on the Shoulder

Dr Mullapudi Harischandra Prasad

Chairman & Managing Director

The Andhra Sugars Ltd

While the National and International media are competing with each other to provide modern information on science and technology. “Palle Srujana” in an equal tone and tenor, is providing information which is not known to that media. Its contents are related to education, medicine and daily life are obtained from villages and common people. The presentation is simple and written in the language of common people. The effort is commendable and fills our heart with pleasure.

I wish the magazine an excellent growth and hope that it would create conducive circumstances to nurture creativity.

(Mr Prasad, we hope you will help in spreading a good will about Palle Srujana. After all, how else will the idea spread? Ed)



Noble Initiative

Dr Shankar Pariplly

Lecturer, Govt DIET, (State Resource Group Member SSA)

Warangal, Andhrapradesh

shadiet@yahoo.com

We are proud of your efforts in documenting inventions of rural India. I read about you in India Today and came to know how much inspiring hard work you have done. I am a lecturer teaching at The Teacher’s Training college and worked as District Science Officer in Warangal of Andhrapradesh. I am also closely associated with *Sarvashikshaabhiyan* of A.P. I am interested in indigenous science and Gandhian thoughts.

Andhrapradesh *Sarvashiksha-abhiyan* is initiating Science Forums where teachers could discuss about various issues related to science and its practice. This becomes a force to dwell with the grassroot innovations. Please bless us to take your ideas to document grassroot talent.

(Many thanks for your kind words about what is essentially a team effort of many quiet workers who work voluntarily from the background to make Honey Bee what it is.

I can see the tremendous power that your network has and we will very much like to forge close linkages. Please advise as to who could trigger start the process (Will you do this?). We are looking forward to a very close and active cooperation. Please stay in touch. Ed)

Contd... from page 21

Within themselves, no licensing is required. But for the firms and other third party formal organizations, a commercial license would be required. They can not take the technology evolved by the individual or group members of ‘technology commons’ without any consideration. Most of the innovators welcomed the idea and respected the innovation by Mansukhbhai which has made substantial improvement in productivity. A joint patent application would be filed by GIAN with the help of SRISTI for protecting the ‘technology commons’. Under MVIF (Micro Venture Innovation Fund), NIF would provide risk capital to the commons for improving their productivity. Time will tell how this concept evolves and meets the goals of communitarian spirit and IPR protection.

A Veterinary Workshop in Bihar

A two-day state level workshop of herbal veterinary healers was organized in June in Champaran district of Bihar. Over 30 healers shared their knowledge with each other and also learnt about NIF activity.

Dialogue on Innovation with Chief Ministers: Grassroots Innovations Reach the Top

Dr Vijay Kelkar, Chairperson, 13th Finance Commission, is the member of the Governing Council of NIF and has been responsible during his days in Finance Ministry for setting up of NIF. During the interactions of Finance Commission with the Chief Ministers about various matters, he felt that a photo essay in the form of a coffee table book based on innovations and traditional knowledge from and for each state would constitute a noble gift to each Chief Minister. The first of the series was presented to the Chief Minister of Himachal Pradesh followed by Haryana.



22nd Shodhyatra

22nd Shodh Yatra Announcement
Motihari to Betiah
December 29, 2008 to January 3, 2009

The 22nd SY is being organised from December 29, 2008 to January 3, 2009 in the karmabhoomi of Gandhi ji, Champaram district of Bihar, where he started the Satyagrah movement. This is also the birth place of Chanakya (Kautilya), the great statesman and economist. The Shodhyatra will start from Motihari and conclude in Betiah. Our partner Dr. Ambedkar Sansthan (AWCCDS), Siwan will be the hosts and local organizers.

All the readers, their friends, and others interested in walking with us are welcome to join the 22nd Shodhyatra in Bihar. The idea is to learn from the wisdom of common people, their values, concerns and creativity. The cost of food and local travel is shared by all the participants @ Rs.200/- per day. Others who are interested but may not be able to pay, may also join and then their cost will be shared by other participants.

For more information please contact

SRISTI, 079- 27913293, 09227461139
www.sristi.org

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