

HoneyBee



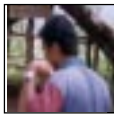


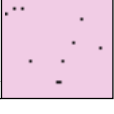


Vol 11 No 1 January-March, 2000

Who for Whom



**A Voice of
Creative Farmers, Artisans, Pastoralists
and Other Grassroots Innovators**

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Honey Bee stands for people to people networking in local language(s), and assurance to providers of knowledge that they would not be impoverished by sharing the knowledge: when bees cross-pollinate, flowers do not complain that pollen is taken away.

Cover Story

Who for Whom

Once a man held a huge banquet with a thousand guests. When someone presented a gift of fish and fowl, the host said appreciatively, "Heaven is generous to the people indeed, planting cereals and creating fish and fowl for our use." The huge crowd of guests echoed this sentiment.



A youth about twelve years old, however, who had been sitting in the most remote corner of the banquet hall, now came forward and said to the host, "It is not as you say, sir. All beings in the universe are living creatures on a par with us. No species is higher or lower in rank than another, it's just that they control each other by differences in their intelligence and power; they eat each other, but that does not mean they were produced for each other. People take what they can eat and eat it, but does that mean that heaven produced that for people? If so, then since mosquitoes bite skin and tigers and wolves eat flesh, does that not mean that heaven made humans for the mosquitoes and created flesh for tigers and wolves?"

Source: Thomas Cleary, *The Spirit of Tao, Tales of Inner Meaning*. Shambhala, Massachusetts, 1991.



Sixth International Summer School
on Management of Common Property Resources for
College teachers, NGOs, Policy Makers, Public Administrators,
Community Leaders and Doctoral Students
June 10 - 19, 2000

An inter-disciplinary course with special emphasis on ecological economics perspective is organized to equip young scholars and practitioners in theory and practice of common property resources. The course will also deal with special sectoral areas such as forestry, fishery, grazing lands, water, etc., apart from conceptual issues in transaction costs, political theory of institutions, organizational theory, participatory action research, etc.

Who can apply?

Colleagues from universities, research institutions, colleges, NGOs, central and state governments, community organizations, forest and administrative services with background in economics, sociology, political science, anthropology, agriculture, ecology and related disciplines having strong interest in research, action and/or teaching in common properties with post-graduate degree and some evidence of independent work can apply. Preference will be given to applicants from ecologically disadvantaged regions such as hill areas, drought and flood prone areas, forest regions, etc. We have had nominees from Sweden, China, Thailand, Bangladesh, Zimbabwe, Botswana, Kenya, etc., in the previous courses. Scholars registered for Ph.D or working with voluntary organizations can also apply.

How to apply?

The selected candidates from outside India will pay US \$ 1500 whereas participants from India will have to pay Rs.10000/= towards the cost of boarding, lodging and a set of teaching materials. Candidates may apply with a two-page note on their plans to pursue research, action or teaching in this area, along with (a) a case study of any local / indigenous institution for common property resource management, (b) a copy of bio-data and (c) list of publications, to The Programme Officer, Centre for Management in Agriculture, Indian Institute of Management, Vastrapur, Ahmedabad 380 015, Gujarat, latest by May 30, 2000. Waiver of partial or full charges is possible for deserving candidates, particularly women and community leaders.



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Drought of Ideas: How to Tackle that

In the current context of drought in western region, there seems to be a crisis because the response is *ad hoc* as ever. There is no effort to learn from what has been done or suggested in past. We had twelve good monsoons with almost stagnant agriculture, and there was no crisis.

Now there is one bad monsoon and the society is in panic. Understandably so because millions of people and animal are suffering. The merit of decentralized water harvesting structures is much talked about but the solution is still searched in mega projects. The same money that is being spent in hiring tankers to take water or trucks to take fodder would have helped in rejuvenating the traditional water conservation structures. But that will not happen. Because if people become self-reliant, the industry of making money in crisis will dry up. The policy makers will have to realize that it is not too much money (large subsidies) that helps but just the right amount. Some of the readers may recall the profile of Premjibhai (Honey Bee 7(3): 3, 1996), Shri Sunda Ram (Honey Bee 8(1): 3, 1997) and a review we published of an old book called as “*Akaal Kasht Niwarak*” by Raghunathmal Rai (1943) based on his more than 50 years of experience in tackling drought in western Rajasthan. Readers may also recall that we have published a large number of ways in which local people have conserved water in dry regions on their own. But it will be too much if we were to expect policy makers to pay attention to this source of living wisdom.

Let me refresh the memories of mandarins so that those who care to listen in India or more than other seventy countries may find some succour from Honey Bee database of underutilised ideas and innovations. Our relentless struggle to put unrecognized and unsung creativity and innovation of grassroots people on the table will bear fruit slowly.

Just the right amount

On one hand government claims inadequacy of funds for various developmental activities. On the other, it insists on giving 90 per cent subsidy for watershed works. Premjibhai developed a very interesting cement - scheme. He asked people whether they wanted to solve their problem of water availability at their own farm or in a cluster of farms. On receiving applications, he asked them which were the things they could do on their own. Finally, he offered to provide only the cement (which was the major external input) and thus reduced the cost of the work and also the subsidy to about 30 - 40 per cent. His model has already resulted in about hundreds of structures in different villages.

Greening the desert

Sunda Ram developed many innovations including new varieties and most importantly an innovative agro forestry system which could increase survival rate of tree seedling plantations in dry regions from usual 30 per cent to 85 per cent and cost reduced by more than half. How much area one would imagine must have been planted under this in the last ten years. Hardly ten hectares. Once again, the major enemy of this innovation is the cost reduction. After all, the entire budgetary process assumes increase in cost every year. If per unit cost reduction became a goal, wouldn't the public systems have to become more innovative ? (perhaps read Honey Bee more regularly!).

Overcoming famine

Shri Raghunathmal Rai was a senior officer of Mewar Kingdom in western Rajasthan. He wrote a book 'Akaal Kasht Niwarak' as an appeal to the king in 1946 distilling his experience of previous fifty years in about fifty pages. He narrated examples of people's knowledge about the directions in which underground currents of water flew *vis-a-vis* the overground currents. How farmers learnt from a village where grass was conserved very well and tried this technology in a different region. One of the most important insights he provides was that through such lateral learning, the village which used to always receive famine relief started paying tax to the state due to increase in their income. There couldn't be better example of overcoming famine on a sustainable basis.

There are a large number of other examples such as innovations in *viridawells* designed to store fresh water in saline soil with saline ground water, roof top water harvesting and underground storage. The recent honour by the president to the farmers of Bhaonta-Kolyala in Alwar, thanks to the extra ordinary efforts of Rajendra Singh of Tarun Bharat Sangh, could have served a better purpose. Government could have decided to allocate a substantial sum for rejuvenating traditional water harvesting structures. The National Technical Committee on Drought which gave its report to the Prime Minister in 1995 had suggested many major changes including the need for learning from indigenous innovations in watershed programmes. In the last five years, the progress on that front may have been minimal if at all. As a member of that committee, I had suggested the need for focusing and also reducing the coverage to only the most serious drought affected districts. Here again, I failed to persuade my colleagues in that committee.

I would like to draw attention of readers

to a short news on Folk forecasting, which once again shows the willingness of US universities to learn from people's knowledge, particularly in terms of rain forecasting. May be now, that US scientists have started paying attention to folk wisdom, Indian scientists will also follow! Till then, if millions of people suffer drought effects and lots of money goes waste, so what? There is another major crisis in the offing. The urban indiscipline and indifference towards the need for water harvesting and recycling is going to lead to major conflicts in times to come. A number of urban municipalities are digging deep bores in the neighbouring rural areas and reducing the already declining water

Government could have decided to allocate a substantial sum for rejuvenating traditional water harvesting structures.

table. This cannot continue. It must be made mandatory for every housing society and residential complex, whether private or public, to make arrangements for harvesting roof top water during rains and store it underground for meeting some of their needs besides recycling waste water. Their water and power connections should be disconnected after six months if they do not comply. Optimal coercion, after all, is not zero. Free power and electricity only add to the woes of areas which have still to receive these resources because state has no funds. It is time we decide that famines have no future if we are willing to learn and implement folk wisdom, local innovations, civic discipline and overcome the tendency to subsidise in an inefficient and untargetted manner.



Anil K Gupta

Folk Forecasting

Potatoes, the staple crop in the Andes, need a lot of moisture. The best planting time is at the start of the rainy season in October, but in drought years the rains arrive weeks late. Farmers traditionally determine when the rains will come by noting the brightness of the Pleiades star cluster months earlier. The folk ritual really works, say anthropologist Benjamin Orlove of the University of California at Davis and atmospheric scientists John Chiang and Mark Cane of the Lamont-Doherty Earth Observatory in New York.

The Pleiades contain 11 visible stars of varying brightness. In June in the Andes, the cluster appears low over the eastern horizon just before dawn. If the skies are clear, the cluster will appear brighter and contain more visible stars, which farmers take as a sign to plant on time. High cirrus clouds make the Pleiades dimmer, which tells the farmers that rain is likely to arrive late. "It's quite a dramatic thing. They go out at about 4 a.m. during the coldest time



of their year and climb mountains to get unobstructed views," Orlove says. When he and his colleagues consulted satellite imagery and climate data, they found the farmers' technique is very sensitive to high, obscuring clouds—the atmosphere herald of drought and El Nino.

(Refer HB 4(4): 12, 1993; HB3(3&4): 16, 1992; HB8(4): 13, 1997; for forecasting indicators)

Source: Discover, April 2000

Patents for Prosperity: The Case of Tilting Bullock Cart

Given the widespread scepticism in most developing countries about the benefits that can flow to grassroots innovators through protection of intellectual property rights, the story of Amrutbhai Agrawat of village Pikhor in Gujarat is worth taking note of. Readers of Honey Bee may recall that Amrutbhai had developed several innovations for facilitating farm operations in dry regions (*HB 3 (2): 14 1992; HB 6(4): 3, 1995; HB 9(3): 21, 1998*). He had developed a multi purpose toolbar¹ with which farmers could do a large number of operations by attaching different devices, *mini-kaliyu*, a groundnut digger, wheat-sowing box and water pulley². Most of these innovations were shared by Amrutbhai widely with fellow artisans and the result was limited diffusion. Many remained localised and Amrutbhai had no resources either to advertise his products, or do market research to find out new needs or to strengthen his workshop to reduce cost and improve quality of what he was already making.

Genesis of the Idea

It was in such a context that in one of the SRISTI's periodic meetings in 1996, he was invited to make presentation on his new ideas and he articulated the need for designing a tilting four-wheel cart. SRISTI provided him a small venture promotion grant and the cart was ready by January 1997. The advantage of the cart (see figure-1) is that it helps in applying farm yard manure or other soil amendments directly into the furrows. The four wheels help in ensuring that bullocks do not have to carry the load on their shoulders. The cart has in built brake system, shock absorbers, rotating device at the front wheel and many other features.



Figure 1

Technology Transfer

This is where the role of intellectual property rights comes in. Gujarat Grassroots Innovation Augmentation Network (GIAN) was set up in 1997 to help scale up the innovations scouted by Honey Bee Network in Gujarat. GIAN filed a patent on behalf of Amrutbhai (217/Cal/98 dated 14 December 1998) on the design of tilting bullock cart. The right was assigned by the innovator to SRISTI (which also paid the cost) so as to help in transfer of technology and safeguarding the interest of innovator. The cart has since been licensed to three entrepreneurs³ for a period of five years for five districts in lieu of one time payment of Rs.84000/= (about USD 2000). This income accrued in the hands of Amrutbhai entirely due to the intellectual property protection being provided through patent application. Never before a technology was transferred on the basis of district level boundaries and that too for five years. If the entrepreneur wants to renew the license, he will have to renegotiate. The result has been that technology is diffusing in

many more regions than would have been possible if only Amrutbhai had to manufacture and sell the cart. The price has been reduced considerably because entrepreneurs are more adept in this regard than the innovators. For Amrutbhai, it was difficult to make two tilting carts alike. He always tried to improve things.

Amrutbhai continues with his research, given this additional resource. He does not have to depend upon generosity or donation of resources from NGOs (including SRISTI) and he can think of developing new technologies.

Venture Promotion Fund

TePP (Technopreneurial Promotion Programme) of Department of Science and Technology and Department of Scientific and Industrial Research, Government of India provided a grant of Rs 5 lacs (12000 USD) to Amrutbhai through GIAN for upgradation of cart and his workshop. Amrutbhai has developed two more models of the cart (three and two wheeled respectively) and made several improvements for which supplementary patents may be filed.

He has exhibited this cart at several exhibitions including Indian Science Congress, Pune in January 2000. His implements were also exhibited at an International Exhibition organised by IFAD at Rome. SRISTI donated these equipments to IFAD because of resource squeeze on the part of IFAD. The film based on innovations by him and many other innovators has been shown on national and regional television. A product designer from National Institute of Design has contributed some

Contd... on page 8

¹ This toolbar also called as *janak santhi* is far more popular, cost effective and easy to fabricate compared to the tool bar developed by ICRISAT after spending millions of dollars and without any attribution to the farmers whose knowledge made that innovation possible.

² The design of water pulley remained unchanged for almost 2000 years. Amrutbhai made a small modification of attaching a stopper so that women did not have to keep holding the bucket full of water when they had to gasp for breath.

³ The cart has been licensed to Shri Manibhai Patel for three districts for Rs 40,000, Shri Jaisukh Rathor, for one district for Rs 23000, and to Shri Atulbhai for one district for Rs 21000.

SRISTI Sanman 2000 Awardees

During the annual meeting of Honey Bee Network on February 20, 2000, the following fifteen contemporary innovators and traditional knowledge experts were awarded with SRISTI Sanman. They have achieved the distinction in their chosen fields without the help or support of any outside institution. Just imagine, how much more could be accomplished if they were provided with some more recognition and support-financial and/or moral ! A brief citation of each awardee is outlined here:



Shrimati Gothawari, a herbal healer of human and animal diseases belongs to Kanakkankuppam village in Gingee taluka of Villupuram district. People from neighbouring villages visit her for treatment especially migraine, back pain, teeth pain, vomiting and poisonous bite etc. She is adroit in treating animals suffering from diarrhoea and constipation. On her 0.30 acres of land she is practicing organic farming and has conserved some medicinal plants as well.

Shri K Sellamuthu is a skilled labourer engaged in spraying herbal pesticide. Earlier he used to spray chemical pesticides which lead to deterioration of his health. By reading *Num Vali Velanmai* - Tamil version of Honey Bee - he has developed a herbal pesticide. The ingredients of his herbal pesticide are: Leaves of 'nochi' (*Vitex negundo*), Leaves of 'peenarichangu' (*Clerodendrum inerme*), Leaf sheath of 'hothukathalai' (*Aloe vera*), Seeds of Neem (*Azadirachta indica*). He has purchased a motorised wet grinder in order to meet demand and his income has risen manifold. He has also standardised the recipe of 'Panchagavya', a liquid manure useful for garden plants. He has developed a new model of eco-preneurship.



Shri K Nagarajan is a twenty nine year old farmer from Koralamatti village in Dindigul district involved in preparing and distributing a herbal recipe against pests and diseases of crops. He has developed this recipe after reading Tamil version of Honey Bee and later experimenting on his own in farmers field. The ingredients are : Neem seeds (500 g); Tobacco waste (100 g), *Acorus calamus* (100 g); *Sapindus emarginatus* seeds (50 g); and Asafoetida (250 g). He has so far sold more than 1000 litre of this herbal pesticide.

Shri Ambaji Telanga belongs to Gorta village in Bidar district of Karnataka. He is an agricultural labourer practising herbal veterinary medicine in dry regions of Bidar. He is a dedicated member of Honey Bee Network. Among his unique and effective practices, local medicines against yolk injuries, debilitating condition and for external parasites are very popular in about ten villages in the region.



Shri Basavaraji Santheshivara belongs to Hasan district of Karnataka. He is a prolific writer and has contributed many articles for *Hitalagida* - Kannada version of Honey Bee. Some of his significant innovations comprise controlling insect pests such as brown plant hopper, red spider mite and rhinoceros beetle in coconut plantation. He has also developed an unique method of making organic manure out of coir pith. He has demonstrated a paddy yield of 30 quintals (3000 kg) per acre through organic farming. In addition he has also conserved several indigenous varieties of cereals and minor millets.

Shri Narayana Reddiar belongs to Siddireddipathi village of Madurai district. People of this village organised themselves and have grown neem (*Azadirachta indica*) plantation on about 250 hectare. Over the years, the villagers have developed social institutions for managing and protecting their trees and crops. Farmers derive income from sale of neem seeds and timber. Villagers' total income has increased manifold. The rules evolved in the management of neem plantation are worth replicating in other villages. He received the Sanman as a representative of Siddireddipathi village.



Shri Naranbhai Gadhvi is a poet at heart and a farmer by profession from Mundra Taluka of Gujarat. He has spawned many innovations through his exceptional intelligence. One amongst these deals with pollination of 'kharek' (*Phoenix dactylifera*) trees. Government of Israel has reportedly invited him to share his innovative technique of pollinating 'kharek' which increases yield by around 12-15 times. He has also developed a machine by which dates can be processed into 'kharek' within twenty four hours.



Shri Manaram Choudhary is an innovative farmer from Ladkhani village in Sikar district of Rajasthan. He has developed a new variety of onion which takes less time to mature. This variety of onion is sown around October and harvested in early March. He developed this variety after experimenting for more than ten years. Yield of around 400 quintals per hectare can be obtained through this variety. Seed rates of this variety hovers around Rs. 1000 per kg while sometime rising as high as Rs 3000 per kg. This variety is intensely cultivated around Sikar district of Rajasthan.

Shri Jagdish Prasad Parikh is a fifty three year old farmer who left his government job to start farming. He has developed a variety of cauliflower which weighs as much as fifteen (15) kilogram. He presented many such cauliflowers to senior government officials and Chief Minister of the State. This particular variety of cauliflower can be sown in all the three seasons. He has been distributing seed of this variety free to his fellow farmers. His innovative skills has been praised and in the process he received numerous prizes and citations. Efforts for deposition of seeds of his and Shri Choudhary's varieties in National Gene Bank are on.



Shri Mansukhbhai Patel is a self trained electrical engineer and is known for his innovative solutions among his colleagues and friends. He was born in a farmer's family of Trent village in Viramgam taluka of Gujarat. He has designed a cotton stripper after sustained efforts over the years. The quality of cotton stripped by using his machine is better and fetches higher price. The machine costs about rupees two lakh and eighty thousand and runs on a four hp, single phase electric motor. The capacity of the machine is eight tons per day which is equivalent to 400 man-days of labour.

Shri Dhanjibhai Laljibhai Kerai is physically challenged person from Karaghodha village of Kutch District. He is the youngest of the five brothers. Even at the present age of 28 years he measures only two and a half feet in height. Realising there is no job in and around his village, he left studies. He started as an apprentice in clock and radio repairing. By and by, he also learned repairing engine, tractor and electrical appliances. He has developed an attachment to the scooter by which he can drive it once installed in the seat.



Jamnaben Somabhai Damor is considered to be a specialist when it comes to treating animals in and around Timla village, district Panchmahal of Gujarat. She had learnt the secrets of all the healing herbs by watching her mother and grandmother at work. She had in her an innate urge to unravel the secret potential of medicinal plants. She has not only tried the proven traditional remedies, but has also experimented with some modifications thus learning the practical applications of each of them.

Mansukhbhai Ambabhai Jagani belongs to Amreli district of Gujarat. Labour scarcity made him think to innovate a device to overcome the problem. He has designed a bullet motorcycle (4.5 hp, diesel-driven *Santi*) which can be easily dismantled and refitted. This *Santi* is a multi-purpose contraption which can be used for ploughing, weeding, sowing of seeds and it results in drastically reducing the cost of these operations.



Motibhai B Nayak is from Saradoi village in Sabarkantha district. He was born in year 1948 and became a primary school teacher in year 1967. He belongs to Bhavaiya/Bhoiak family, the carriers of Bhavaiya-a Gujarati folk art. He decided to make use of this skill. He learnt many folk languages and traditional folk musical instruments and related all of them to education. He used this skill to impart quality education, train youth of the village in cultural activities. He had won the taluka best teacher award in 1975, district best teacher award 1978 and the President's award in 1988.

Kunwarben Rajput belongs to Sukel village of Surendranagar District. This district faces severe shortage of water and salinity. Few years ago salinity led to epidemic in the village in which she lost one of her family member. With the grant provided for making underground tank, she preferred to use stone slabs. The logic was that the stones could be used for other purpose after fifteen to twenty years when tank may outlive its utility. Such is the concern for sustainability. She raised a tank with the help of SEWA for harnessing rain water. In the process she also learnt masonry work. She uses lime to purify the water in the tank. At present some 100 women have joined them in their movement to make the village self-reliant as far as water is concerned.



Benefits from Biodiversity Use cannot be Shared Anymore: The case of Kani Tribals

Article 8(j) of Convention on Biological Diversity (CBD) provides that knowledge, innovations, and practices of local or indigenous communities of individuals can not be used without their involvement and approval, ensuring in the process equitable sharing of benefits. This may seem a tall order if we look at the prevalent global and national practices in regard to access to biodiversity and associated knowledge systems. However, a pioneering effort was indeed made some years ago by scientists then of All India Coordinated Research Project on Ethnobiology (AICRPE) and later of Tropical Botanical Garden and Research Institute (TBGRI), Kerala to create an exception in this regard. Patent was filed on the innovation based on tribal knowledge, license was given to an ayurvedic company for commercializing the drug, and benefits were shared with tribals by putting 50 per cent of the license fee i.e. Rs 5 lacs (approx 12000 USD) in a trust established under their control. The individual information providers were given special incentives from the trust. However, the model has come under question. The forest department has not declared the plant in question, that is, 'arogyapacha' (*Trichopus zeylanicus*), a herb with tonic qualities, a minor forest produce. Thus Kanis can not collect this plant from wild (which is proper given the threats to this plant) or from cultivated sites (which is not proper since its cultivation is quite easy) and earn money that is due to them. The consumers can not get *Jeevani* drug which is quite rejuvenating. And tribal trust cannot get more income through sharing of royalty and thus look after their own developmental needs. Why would not forest department be more reasonable?

How did it begin?

A team of scientists, led by Dr Pushpangadan (then with Regional Research laboratory, Jammu) was surveying ethno-botanical knowledge of

Kani tribals in the Thiruvananthapuram forests about thirteen years ago. While the scientists felt fatigued climbing the mountains and walking long stretches, they noticed that the Shri Mallan Kani and Shri Mathan Kani, two tribal guides accompanying them were quite agile and not tired. The Kani guides constantly ate some fruits which were apparently the source of their energy. After much persuasion, Shri Mallan and Mathan revealed the identity of the plant from which the fruit was obtained. A detailed scientific investigation of the plant was conducted, including chemical screening to isolate the active principles. Tropical Botanical Garden and Research Institute (TBGRI) scientists after isolating the herb's rejuvenating compound developed a drug formula containing 15% of 'arogyapacha' named *Jeevani* and some other ingredients. Two national patents were filed by TBGRI on June 4, 1996 on its immuno-enhancing, anti-fatigue, anti-stress, hepato-protective properties along with a process of making the drug.

Jeevani is a potential global hit with its anti-fatigue and immune enhancing qualities. Rights to manufacture *Jeevani* was given to Arya Vaidya Pharmacy (Coimbatore) Ltd., for a period of seven years with a license fee of Rupees Ten Lacs and two percent royalty on sales. The proceeds from licensing and royalty are to be shared equally with Kani tribals and the research institute.

Benefit Sharing

In November 1997, some Kani tribals with assistance from TBGRI, registered a trust called *Kerala Kani Samudaya Kshema Trust*. The President and the Vice-president of the Trust are the two Kanis who imparted knowledge to TBGRI regarding 'arogyapacha'. TBGRI facilitated a payment of Rs. 50,000/- from the interest of first year on Trust's share of licensing fee that is Rs 5 lacs to three Kanis (Shri Mallan Kani, Shri Mathan



Kani Samudaya Trust

Kani and Shri Echhan Kani) who divulged the information about 'arogyapacha'. Some discontent has arisen among Kanis on the nature of benefit sharing so far. A problem was also faced when Kanis started taking 'arogyapacha' leaves out of their settlements for sale and were stopped at the forest check-post. Forest officials did so because 'arogyapacha' is not yet included in the list of minor forest produce. Only approved minor forest produce are allowed to be collected and taken out of forest.

There are several ways in which this problem can be solved:

- Benefit Sharing: Money distributed to three Kanis as prizes /compensation for sharing knowledge can be reimbursed to the Trust from the license fee share of TBGRI so that the Trust uses the amount of Rupees Five Lacs and interest thereon for community welfare activities. After all, the Kani informants had shared their knowledge with TBGRI and not the Trust. Why should Trust pay them from its share. It is a common knowledge among the Kanis and the properties of 'arogyapacha' disclosed were neither identified nor improved by only three Kanis who shared the information.
- It is claimed that 'arogyapacha' is rare and its collection could endanger its existence. We feel otherwise. Even if it is rare, its cultivation is quit easy.

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Should Simple Innovations be Ignored: Milk for Controlling Diseases and Increasing Fragrance

Milk has been traditionally used as germicide for diseases of plants and animals. The fact that minimal technology is involved and does not require externally purchased inputs should serve as an incentive to develop it as an effective anti-viral, fungicidal, bactericidal and deworming agent. The most significant traditional practices involving milk and its derivatives has been synthesised in this issue to initiate active scientific research in this area. This note has been compiled by Shrestha Sarkar, with inputs from Manish Patel of SRISTI team and Dr. Rupela, ICRISAT, Hyderabad. However, responsibility for the views expressed rests entirely with Honey Bee.

There is a long tradition of indigenous innovations involving prophylactic use of milk and its derivative for controlling diseases in plants as well as animals in India and rest of the world. Many of these traditional practices are supported by scientific findings as reviewed in this note. And yet, these findings have not been converted into technological recommendations to enable farmers to reduce their costs and make their agriculture more sustainable. The formal scientific studies are also *ad hoc* and there is no systematic and sustained research programme to encourage use of milk which has been found extremely effective in controlling certain diseases. In spite of awareness about the hazardous effects of chemical pesticides in the developed countries, recommendations to use milk in controlling diseases are few (Hartman, et. al., 1999). The question arises as to whether simple innovations are to be ignored for the fact that they are uncomplicated. Do scientists find it below their dignity to test and recommend (even if they find them effective)? Following are some of the outstanding practices of use of milk selected from Honey Bee database.

Reduction of Viral Diseases in plants

Significant reduction of viral diseases has been found to occur mostly in infected plants of Solanaceae, Piperaceae and Malvaceae families. Chester, 1934, was first to demonstrate the inactivation of virus by milk. Traditionally, milk plays an important role in curing viral diseases (Singh et. al., 1985). In Honey Bee 1992, it was reported that farmers frequently dip their hands in milk while

transplanting tobacco seedlings so as to reduce the spread of Tobacco Mosaic Virus (TMV). Dr. M. K. Chari and Dr. K. Nagarajan reported that farmers in West Godavari district have successfully reduced TMV symptoms using milk sprays but the practicality and economics of large scale use has not yet been worked out [Honey Bee, 1992, 3(3&4):8]. Fresh milk spray reduces nearly 73 per cent of TMV infections in tobacco, as reported by Patel et. al. (1993, pers. comm). Fermented buttermilk of one litre with 20 litre of water, sprayed on

The question arises as to whether simple innovations are to be ignored just because they are uncomplicated. Do scientists find it below their dignity to test and recommend (even if they find them effective)?

tobacco plants, cure leaf curl disease [Comm: V R Iyappan, Honey Bee, 1995, 6(1):10]. Fresh goat's milk sprayed over plants like chilli (*Capsicum annuum*), brinjal (*Solanum melongena*) and spices like black pepper (*Piper nigrum*) helps control of fruit and flower abscission and leaf curling that occurs due to cold in winter [Machar Babudiben, Dahod, Comm. Ramesh Taviyal, Honey Bee, 1999, 10(1):14]. A mixture of tobacco leaf extract with equal quantities of bajra flour and buttermilk when sprinkled on chilli crop @ 30-40 kg / acre, twice or thrice at weekly intervals helps to cure leaf curl and fruit and flower abscission

[Vasava Maganbhai, Dang, Comm: Baria Balubhai, Honey Bee, 1993, 4(2&3):19].

Seed treatment to prevent *Puccinia* rust

Milk is particularly effective in preventing rust by the fungal pathogen *Puccinia graminis var. tritici* and farmers immerse the seeds of wheat in milk before sowing to avoid rust disease [Karmhanbhai Karamshibhai Desai, Banaskantha, Comm: Rathod Balvantsinh P., Honey Bee, 1991, 2(1):18]. The neutral to near alkaline pH of milk not only washes off the fungal spores from the surface but also the adhesive property of milk fat prevents any further invasion by spores and formation of pustules. The low pH of whey milk may prevent germination of fungal spores avoiding possible secondary infection.

Treating Foot and Mouth Disease (FMD) in animals

For treatment of FMD, fresh milk is poured on the infected hooves of the animals [Chhaganbhai Bhimajibhai Lukarvadia, Amreli, Comm: Thakore Morighi S., Honey Bee, 1991, 2(1): 21]. It has been detected that use of whey milk could reduce the consumption of serum required for growth of FMD virus upto 90% (Saha, et. al., 1989).

Intestinal De-worming

For control of intestinal parasites, a mixture of curd and buttermilk is kept overnight in a copper container which turns blue-green. This is diluted and fed to young calves for deworming [Sukabhai Kanabhai Gadat, Mehsana. Comm: Mahesh. K Parmar, Honey Bee, 1993, 4(2&3):6].

Treating Bacterial infection in animal

The leaf extracts of *Tylophora asthmatica* and *Capparis brevispina*, pepper and garlic is mixed with buttermilk/ goat's milk and fed to animal suffering from bacterial infection [Jogappa M, Comm: B. A. Anil Koushik, Honey Bee, 1997 8(3):8].

Imparting Nutritive Value for plants

The proteins, fats and carbohydrates present in milk and its derivatives have nutritive value that promote growth of plants and increases the yield. A spray of buttermilk on 25-day-old rain-fed crop of groundnut (var. Gujarat-10) gave higher yield of pods by about 250 kg /acre while fodder yield was almost thrice compared to the untreated ones. Buttermilk sprayed on cotton and sesamum crops helped both to survive the water stress period of about 47 days caused by the delay in the last spell of monsoon rains while the untreated ones failed completely [Vallabhbhai Gothi, Honey Bee, 1996, 7(1): 9]. About 1.5 litre of buttermilk (from cow's milk) poured at the roots of adult 'karuvepilai' or 'kadipatta' tree (*Murraya koenigii*) increases the fragrance of leaves several fold [Comm: P Vivekanandan, Honey Bee, 1996, 7(4):11]. A mixture of one kg ghee (butter-oil made from cow's milk) with 50 kg dung used per acre of land as manure for 2-3 years has been found to greatly enrich the soil fertility [Purushottam Rao, Comm: B A Anil Koushik, Honey Bee, 1997, 8(3):8]. Milk facilitates in breaking seed dormancy. Seed soaking in milk for a day prior to planting in different varieties of beans, results in healthy growth of plants with good yield [T S Hegde, Comm: Arunkumar and Anand, Honey Bee, 1997, 8(4):10].

The protective property of milk is attributed to the increased lymphocytic activity, which in turn is dependent on the fat-protein ratio of milk, beside antibodies and other factors. Non-antibody antibacterial factors include bifidus factor, complement components, lysozyme, lactoferrin, lactoperoxidase, non-antibody proteins, gangliosides and

non-lactose carbohydrate factors. Non-antibody antiviral and antiprotozoal protective factors include unsaturated fatty acids and monoglycerides, unidentified macromolecules, alpha2-macroglobulin-like protein, alpha1-antitrypsin, and bile salt-stimulated lipase (Pickering, et. al., 1986). Bacteria (*Streptococcus lactis*, *S. cremoris*) present in whey milk lyse various strains of bacteriophages. The pH value of all milk derivatives lie within slightly acidic range but is never lower than the critical value of 5.5. The passive protection rate had not been co-related with the neutralizing activity of milk but greater immuno-globulin quantity is associated with a good protective effect (Shieh, et al., 1987). From this brief synthesis of traditional knowledge, it can be deduced that milk and its derivatives can be used in controlling both viral and fungal diseases, up to a certain extent. While it has been found that fresh milk effectively controls viral diseases both in plants as well as animals, milk derivatives and different kinds of milk reduce diseases caused by fungal pathogens. Scientific evidence of fungal disease control by prior seed treatment using milk, for example bunt of wheat (Winter, et. al., 1997) suggests that pH of milk and milk derivatives play an important role in the destruction of pathogen spores. Bacteria present in milk inhibit growth of fungal pathogen through the mechanism of antagonism (Patel, et. al., 1998) which is equally applicable for controlling animal diseases (Shieh, et. al., 1987). The customary knowledge of different uses of milk and its derivatives call for urgent scientific support since minimal technology is involved and also much externally purchased inputs are not required. The whey milk, which is often thrown away into the gutters by many milk processing plants can be put to much better uses.

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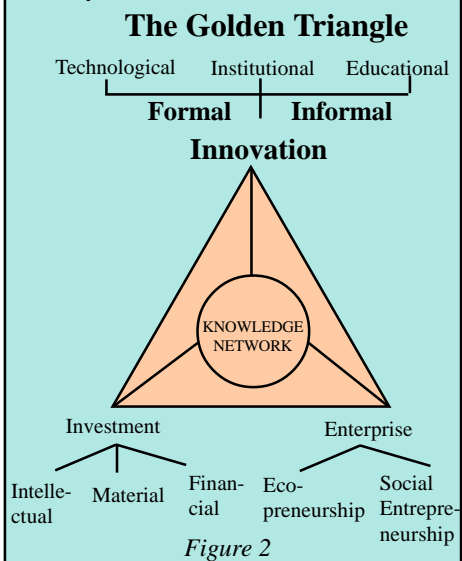
Chester, K S. 1934. Specific quantitative neutralization of the viruses of tobacco mosaic, tobacco ring spot and cucumber

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Patent for Prosperity...

suggestions to reduce the material requirement in the cart.

The linkage between innovation, investment and enterprise (see figure 2) has helped in rewarding creativity through protection of intellectual property rights of the innovator. It is possible that markets may exist in many other developing countries for this innovation. The efforts of filing international patent are on. Those who do not believe in the merit of intellectual property right protection are invited to suggest better ways in which Amrutbhai would receive even more incentives for his continued innovation and development of technologies for small farmers. It is not surprising that large number of technology institutions in the country and outside have not been able



to solve many of the problems that innovators like Amrutbhai are solving through their own genius. By expecting them to share their knowledge freely, are we not suggesting that they remain dependent on either the government or even NGOs like SRISTI or GIAN?

Amrutbhai shares the design and technique of making other innovations including modified pulley freely. We have not found many entrepreneurs willing to invest in those technologies for wider distribution as yet. 

'Aakdo' the Versatile 'Weed'¹: Can it Become a Crop?

Calotropis spp. (family - Asclepiadaceae) is noted to be a cosmopolitan weed, growing in some of the most degraded soil types. The milky latex of the plant contains several phytochemical constituents which can be developed further as insecticide, weedicide, medicine for curing specific diseases as well as for tanning leather. Some of the selective traditional uses of the plant are synthesised in this text to illustrate the potential of such plants which may improve the livelihood support in arid regions.

Both the species, namely, *C. gigantea* and *C. procera*, morphologically represented by perennial undershrub/shrub, have been used for worshipping, food preparation, biopesticide/weedicide, curing of diseases and in non-farm operations like leather processing. The flowers are being used in "Ganesh pooja" [Ref: Karnataka Forest Dept., 1998] and worshipping Lord Hanuman. The Bhils of Southern Rajasthan uses fresh green leaves in a sandwich pattern to bake raw maize bread-cakes [Written by Satish K Sharma, Honey Bee, 1998, 9(3): 8,]. Few selected uses of the plant are as follows:

Extract used as insecticide

Water extract of plant, of about a month old when sprayed over sugarcane crop infested by mealy bug and other sucking pests controls the problem within 2-3 days [Katrodia Chinubhai, Amreli, Comm: Ms Pandya Neha K, Honey Bee, 1993, 4(2&3):20]. Leaf extract of *C. gigantea* in irrigation channels minimizes aphid infestation in mustard crop [Dudhaji Dhulaji Thakor, Banaskantha, Comm: Ramesh R Prajapati, Honey Bee, 1991, 2(1):16]. Farmers scatters leaves of *Calotropis* in the standing crop, infested with termite, trapping the insect larvae that is then collected and immediately destroyed [Jesalbhaj Ranchhodhbhai Raval, Mehsana, Comm: Ranjitsinh M Rathod, Honey Bee, 1992, 3(1):16]. While storing potatoes in heaps, leaves and branches of *C. gigantea* are spread around the store to prevent the attack by rats [Farmers in Karnataka, Comm: Subbayya, Honey Bee, 1999, 10(4):9].

Combination of *Calotropis* extract with other constituents used as insecticide

Extract along with organic and inorganic combinations helps eradication of insect

pests. Mixture of leaf powder in proportion of seven kg each of *Vitex negundo*, *Ipomoea fistula* and *Pongamia pinnata* and four kg of *C. procera* are boiled in 20 litre of water for half an hour and filtered the next day. The filtrate is diluted with 100 litre of water and sprayed on crops (paddy and coconut) attacked by pests [Comm. B.S.Dinesh, Honey Bee, 1997, 8(1):14]. Five kg of leaves of *C. gigantea* are soaked in a mixture of 10 litre of cow urine and 5 litre of water in a mud pot for 3-5 days. It is filtered and diluted with 80 litre of water and sprayed on the foliage to control caterpillars feeding on it [Comm: R Sundara Raman Satyamangalam, Honey Bee, 1999, 10(4):12]. In an effort to merge organic and inorganic inputs to control pests, two month old extract of *Calotropis*

spp. with 50 g urea in one litre water is used for seed treatment of wheat, barley and gram seeds against termite attack. This insecticide does not adversely affect the earthworms. The extract is used on ornamental plants to protect them from various soil pests and increase their growth [Comm: Prem Prakash Sharma, Honey Bee, 1996, 7(1):13]. Branches of *Calotropis*, neem (*Azadirachta indica*) and cactus are swept over paddy field brushes with it larvae and small insects clinging to the leaves [Bhutha Lingappa,

Chitradurga, Comm: Krishnaprasad G, Honey Bee, 1997, 1999, 8(3) ; 10(1):6].

Treatment of animal diseases

Plant extract is used as both externally and internally to cure animal diseases.

Internal Application

Leaves of *C. procera* are fed to the animals suffering from Rabbits or diseases similar to Rabbits, in traditional treatment [Chaturbhai Bavalbhai Patel, Surendranagar, Comm: Kirit. K. Patel, Honey Bee, 1991, 2 (1):21].

External Application

Juice of *C. procera* leaves or decoction of leaves in water is applied on the infected skin of animals, once or twice a day to obtain relief from Eczema within a week [Lilabhai Raval, Mehsana, Comm: Raichand V Bochiya, Honey Bee, 1997, 8(1):11]. Two kg of bark or leaves of *C. gigantea* are boiled to make a paste that is smeared on the swollen body part after cooling. A single application is good enough to remove swelling within 2-3 days [Jamalbhaj Noorabhaj Nandasaniya, Banaskantha, Comm: Pravin Rohit, Honey Bee, 1999, 10(3):15]. A mixture of 100 g of camphor added to 21 drops of *Calotropis* plant juice and 400 g of fresh butter is applied over wounds of the animal [Honey Bee, 1998, 9(1):10].

Leather Processing

A glassful (about 250 ml) of latex of *C. gigantea* is added to 100-150 litre of water along with small pieces of bark of *Acacia nilotica* and raw leather is immersed in it for approximately one to one and half months. Excess fibre is scraped and then washed thoroughly with water after which salt is smeared on it and dried in the sun.



Calotropis gigantea

¹Weed is a plant out of its place. In nature there never is a plant which is out of its place. It is just that we do not know enough about its functions and use. We prefer the term 'companion' plants, but due to wider prevalent usage, we use the word 'weed' here. : Ed

This improves the texture and color of leather that can be made glossy by adding a few drops of oil extracted from *Pongamia pinnata* seeds. The process allows about 30-40 kg of raw leather to be processed simultaneously [Prabhubhai Naranbhai Rohit, Kheda, Comm: Jayesh H Rohit, Honey Bee, 1996, 7(2):14].

After being harvested, tobacco leaves are kept in between layers of *Calotropis* leaves and twigs for about 10 days for curing, till the smell of ripening emanates. This system of alternate layering of tobacco between *Calotropis* leaves is considered to improve the quality of tobacco during curing [Comm: Chaudhar Ramjatam Srisuvalal, Honey Bee, 1996, 7(1):12].

Weedicide

Although disgraced as 'weed', the plant is nevertheless used to control other troublesome weeds. Cut branches of *Calotropis spp.* are kept in the rain water channel to minimize the striga population threatening sorghum, to a great extent. It is repeated several times during the rainy season [Haribhai Devjibhai Patel, Junagadh, Comm: Kirit K Patel, Honey Bee, 1992, 3(1):11]. *C. gigantea* is used as green manure to control the weed *Marsilea quadrifolia*. It releases some tannin like substances that is believed to control the weeds [K. Kanagasabapathi, Honey Bee, 1993, 4(2&3):11].

The family Asclepiadaceae including both the genera is characterized by the presence of milky latex that contain phytochemical constituents like glucosides, asclepiadin, periplocin and alkaloid tylophorine (Blatter, et. al.,1996). Most of the genera in this family are medicinally important, the most illustrative being *Calotropis spp.* The latex, present in the leaves and stem is enriched in a wide variety of compounds including alkaloids (Tewari, et. al., 1978). It imparts pesticidal effect as well as cures certain diseases. The juice of the plant acts as an excellent insecticide either alone or in combination with other constituents. The plant contains alkaloids imparting insecticidal property that play a vital role in the eradication of insect pests. The medicinal properties of both

the plants are similar but the "milk" or latex of *C. procera* is found to be poisonous and is thus applied externally only. This plant is extensively used to heal wounds and possesses anti-bacterial and anti-fungal activity. To heal wounds, flowers are macerated in jaggery, externally applied in humans. Leaves are used for inflammatory swelling (Rathnasabapathy, et. al., 1952).

The plant grows very well in some of the most degraded soils and helps in solving a variety of problems affecting crops, animals and also human beings. The obvious question that arise is: can this "versatile" weed become a crop in the arid region? There is hardly any requirement for external inputs and scientists are already investigating possible usage in human context. There is a need to identify new crops like *Calotropis* in arid region where the sustainability is under threat, the most.

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An Announcement

October 8-14 International Symposium on Scientific Basis for Participatory Improvement and Conservation of Crop Genetic Resources, Oaxtepec, Morelos, Mexico. Contact: Dr. Adi Damania, Symposium Facilitator, Genetic Resources Conservation Program, University of California, Davis, CA 95616-8602, USA. Tele: +1-530-754-8506. Fax: +1-530-754-8505.

Email: <abdmania@ucdavis.edu> Internet. [Http://www.grcp.ucdavis.edu/projects/indexe.htm](http://www.grcp.ucdavis.edu/projects/indexe.htm)

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The case of Kani Tribals....

forest department can assess feasibility of large-scale cultivation and sustainable harvesting of leaves based on existing evidence. It should list it as minor forest produce.

- Arrangements need to be made for some value-addition by the tribal communities so as to generate higher revenue compared to what will be obtained by selling leaves.

- Forest Department must be involved in all future negotiations and discussions with regard to value addition, patenting and benefit sharing based on forest based biodiversity. Part of the problems arise because of perceived feeling among many forest officials that they were not involved while evolving institutional arrangements. It is also true that local level perception of forest officials among tribals is not very positive due to historical reasons. Tribals feel, and rightly so, that their rights have been trampled upon in past. However, at present senior level forest officials seem quite sympathetic to the need for breaking new ground in this regard. But the problem still persists. Will we wait till tribals become impatient?

- The intellectual property protection applications in future should have local tribal innovators as co-inventors. Where the whole community is involved, the representative of the community (traditional leader, herbalists or local knowledge expert/s) may be taken as co-inventors.

There are several useful lessons that follow from this experience in which local knowledge of tribals has led to the development of globally important intellectual property (though patents have not been filed abroad as yet). Tremendous benefits can arise from the efforts of TBGRI for local tribals, if only we can let the value chain become viable and sustainable.

Inducing Innovations for Women

Honey Bee Network has realised that one of the reasons why we have been able to discover lesser number of innovations by/ for women is that they are always culturally coerced to adapt rather than transcend the technological constraints. Women are no less creative than men. It is just that their access to the tools for fabricating new devices has also been impaired. The formal institutions have not bothered. Grassroots innovators do not share this attitude and have innovated several contraptions to bring solace, both physical and economic, to them.

Pulleasy

Drawing water from wells is an exhausting exercise requiring energy for pulling water as well as for holding the bucket. Lowering of water table has resulted in aggravating this problem. Unfortunately the design of the pulley has not undergone any modification perhaps for 2000 years. SRISTI organised a brainstorming session by inviting various grassroots innovators to augment solution to this problem. Amrutbhai Agrawat came up with the idea of pulley which has a stopper arrangement to prevent bucket full of water from sliding back into the well, when left midway. This reduces the drudgery of not letting the bucket fall while drawing water. He has designed two models of this pulley. Ganga pulley which costs Rs 75 is suitable for small wells. It is fitted with a stopper that, when activated, can stop the rotation of pulley in anti-clockwise direction. The stopper when lifted allows the bucket to



fall free. Model Yamuna is a roller shaped pulley on which the rope winds and the stopper prevents movement of the roller

towards the well. This pulley is suitable for well with very low water table and costs Rs 450.

Kittanal

No different is the story of women, men and child labourers who fill nursery bags. Sometimes while filling bags the mouth of the plastic bag gets closed and some of the soil falls outside. One had to use the scoop several times to fill a bag consuming time and involving extra labour. Khimjibhai Kanadia developed 'kittanal', which is just a piece of hollow PVC tube of 75 mm diameter with one end slightly broadened and the other end cut at 45° to the axis. The tapered end is inserted into the polythene bag and held over the tube. The bag is filled by



scooping the other end in the soil in one go. This led to as much as three times increase in the daily income of workers, who are paid on the basis of piece rate. Organisation like SEWA in voluntary sector and Ballarpur Industries in private sector have lauded the innovation.

Gum scrapper

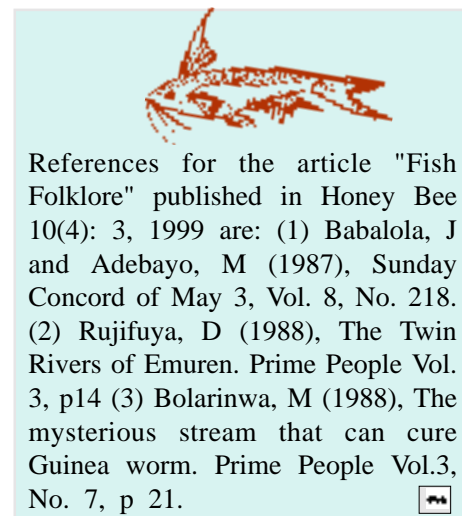
Women while scrapping gum from thorny *Prosopis juliflora* trees have to undergo severe pain and even bleeding. Some times gum falls on ground and mud gets stick to it resulting in poor quality of gum. This problem was raised by the participants in a workshop on Institution Building organised in collaboration with SEWA. Suggestions were made to Khimjibhai Kanadia which he improvised through his own creativity. He conceived the idea of attaching a saucer shaped plate which prevented gum from falling on the

ground. This leads not only in increasing the market price of gum but saved women from immense pain.



Diffusing Innovation

These innovations have caught the imagination not only of people but voluntary and private sector as well. But the diffusion has not been very satisfactory. We would have liked to see open wells in every village of the country installed with these pulleys and all nurseries using kittanal (See Honey Bee, Vol. 9(1):7, 1998). One prohibitive factor is the cost in the case of pulley for which each Member of Parliament can apportion certain amount of money from their quota for development. This can be used for diffusion of these pulleys. Is any MP listening? Similar action from District Magistrates can go a long way in alleviating the problems faced by women. Any other suggestion for popularisation of these innovations are welcome. ☐



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From Grassroots to Global: International Competition for Scouting Innovation

International Fund for Agricultural Development (IFAD) announced the First International Competition for scouting grassroots innovations in survival technologies in association with SRISTI and Honey Bee Network. The response was spectacular with as many as twelve countries participating in it. The countries from which we received response (figures in the bracket gives number of entries) were India (42), Nigeria (6), Nepal (8), St. Lucia (10), Chile (1), Turkey (1), Uganda (23), China (1), Ethiopia (1), Pakistan (4), Benin (2) and Kenya (14). The entries have been rated on the basis of six defined criteria on five point rating scales by four different judges. The criteria used were uniqueness of practice, novel use of ingredients and their apparent effectiveness, use of local material, prospects for research and development and applicability. All the above criteria carried equal weightage. The entry which won the first prize is published here.

First Prize: Extending the Life of Sweet Potato Slices

Auta Deogratias of Uganda received first prize in the First Global Knowledge Contest for his innovative practice regarding the storage of dry sweet potatoes. Well known as a progressive farmer in the County of Soroti, this 30-year-old innovator has many



accomplishments to his credit. He was identified as the Best Youth of the Country and one of the farmer innovators in 1999 -World Food Day. Way back in 1997, while removing weeds from his farm he noticed that insects and caterpillars avoided devouring *Lantana*

leaves and also the sweet potato crops in the vicinity of the *Lantana* bush were spared from attack. This gave him the idea to use the leaves of *Lantana camara* for storing dry sweet potatoes up to a period of six months (Also refer *Honey Bee* 7(1): 7, 1996; 8(1): 3, 1997; 10(4): 7, 1999 for practices using *Lantana camara*). The procedure starts with harvesting sweet potatoes followed by peeling of their outer skin and slicing them. The sliced pieces are dried and are usually stored in the granary that had been thoroughly cleaned and pores closed by smearing with cowdung. He places a layer of *Lantana* leaves on the granary floor followed by a 40-45 cm layer of dry sweet potato slices which is again followed by the layer of *Lantana* leaves and so on. Depending on the height of the granary, the numbers of layers are adjusted. Each granary has a storage capacity of about 360 kg of sweet potatoes. With frequent onset of famine, early rotting of the harvest and attack by pest, Auta had no other alternative but to innovate a procedure to enhance the preservation time of sweet potatoes from three months to next harvest. Sweet potato is one of the staple food in Uganda and its neighbouring countries, Kenya and Somalia, next to Cassava and is served in a variety of cuisine. Auta strongly recommends using *Lantana* leaves in storing other products likewise. He is enthusiastic in organic farming which is a part of soil fertility management program and also water harvesting which is of utmost significance in an area receiving less than 1000-1500 mm rainfall. The scarcity of water encourages conservation of water and Auta manages in doing so in his field by harvesting rain water and stymieing water from washing away the loose sandy top soil. This allows water to percolate soil thereby increasing soil moisture content. He adds cowdung manure that he collects from his neighbours to increase the quality of soil. He feels that he is still a small

farmer with merely 20 acres of lands to experiment on and is eager to share the results of his experiments with others.

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 ☐

Sadbhav-SRISTI Sanshodhan Laboratory

A major threat to the sustainability of natural resources is the erosion of people's knowledge. The basic reason for erosion of knowledge is the low value attached to it. The laboratory will help convert local knowledge and resources into value-added products. The goals are: to document and scientifically validate the grassroots level innovations into potential commercial products, conserve endemic and endangered medicinal plants and rare forest trees; assess inventory and design conservation methods of threatened plant species and develop a tissue culture facility for the same, to monitor soil microbial diversity and assess ecosystem health and screen microbes for developing new products and services and develop a reference standard for organic certification, to consolidate on farm, on station and laboratory research on sustainable technologies and add value to them and share benefits from the commercialization of new products and technologies with local innovators and local communities and generate self-reliance for SRISTI.

Sadbhav foundation, a Bombay based Trust is providing a grant of Rs. 60 lacs for the initial period of two years towards establishment of the laboratory. SRISTI and Sadbhav have reached an understanding that the latter would be a facilitator, while the laboratory would be a part of SRISTI. ☐

'I' in India for Innovation: National Innovation Foundation (NIF)

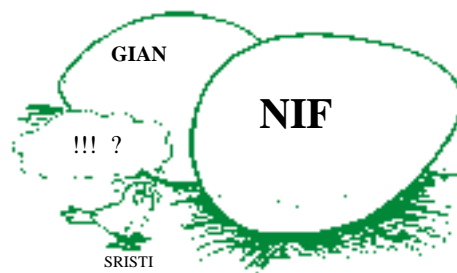
Persistent efforts by Honey Bee Network and several well wishers lead to the announcement of the formation of NIF in the Union Budget 1999. Recently, Department of Science & Technology allocated Rupees 20 crores as the corpus of NIF. The objectives of NIF are:

- To help India become an inventive and creative society and a global leader in sustainable technologies by scouting, spawning and sustaining grassroots innovations. To ensure evolution and diffusion of green grassroots innovations in a selective, time bound and mission oriented basis so as to meet the socio-economic and environmental needs of our society.
- To provide institutional support in scouting, spawning sustaining and scaling up grassroots green innovations and helping their transition to self supporting activities, seeking self reliance through competitive advantage of innovation based enterprises and application of people generated sustainable technologies at grassroots level.
- To evolve strategies and conduct, coordinate and support research, design and development efforts in the country on grassroots innovations so as to attain and maintain technological competence and enhance self reliance. To build linkages between excellence in formal scientific systems and informal knowledge systems and create a knowledge network to link various stakeholders through applications of information technologies and also otherwise.


NIF has been registered as a society under the Society Registration Act 1860, with its head office in Ahmedabad, Gujarat. The NIF has eminent persons on its board which include Dr. R.A. Mashelkar, Chairperson NIF and DG, CSIR; Anil K Gupta, Vice-Chairperson NIF, Coordinator Honey Bee Network and Prof. IIMA; Dr. Vijay Kelkar, Executive Director, IMF; Dr. E A S Sarma, Secretary,

Economic affairs; Dr. V.S.Ramamurthy, Secretary, Department of Science and Technology; Dr. R. S. Paroda, DG, ICAR; Prof. Kuldeep Mathur, JNU; Mr Indrajit Khanna, Chief Secretary, Govt. of Rajasthan; Ms Elaben Bhat, Founder SEWA; Mr. L N S Mukundan, Chief Secretary, Government of Gujarat; Ms Lalita D Gupte, Joint Managing Director, ICICI; Mr. Anand Mahindra, Managing Director, Mahindra & Mahindra Ltd; Prof. J L Saha, Director, IIMA; Mr. T P Vartak, President, Four Eyes Foundation, Ex Officio members, Financial advisor, Department of Science & Technology and Finance Secretary, Government of India.

NIF will forge linkages among innovators, investors and entrepreneurs wherever possible, help in generating respect, recognition and reward for innovators besides pursuing intellectual property right protection for them within and outside the country and will help set up a few incubators at leading academic and



other locations for converting innovations into viable business solutions. NIF will also mobilise leading experts in various fields both from within and outside the country for value addition in local innovations.

The first board meeting was held at CSIR Vigyan Kendra, Delhi on 3rd March 2000 where some important decisions regarding the operation and recruitment for NIF were taken. NIF is a giant step in the direction of making India innovative and will ensure, to use Dr. Mashelkar's phrase, that "I" in India stands for Innovation. 

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Milk for Controlling Disease...

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National Innovation Foundation

In Collaboration with

**Honey Bee Network &
Indian Institute of Management Ahmedabad**

Announces

First Annual Competition for Scouting Grassroots Technological Innovations

National Innovation Foundation

The Department of Science and Technology, Government of India constituted the National Innovation Foundation with an aim to recognize and support creative potential of innovators at the grassroots to help make India self-reliant and a leader in sustainable technologies. The foundation enables grassroots innovators to (a) build linkages with science and technological experts, (b) forge linkages among innovators and entrepreneurs while pursuing intellectual property rights protection for innovators and (c) provide venture promotion support for small innovators etc.

The Competition

The NIF solicits entries about innovations attempted by farmers, artisans, fisherman and women slum dwellers, workshop mechanics, local communities in managing natural resources, biodiversity, developing new farm implements, herbal pesticides, curing diseases, construction of low cost environmentally benign houses or any other aspect of survival in urban and rural areas.

The Award

Based on a rigorous screening process the first three innovations would be awarded Rs. 50000, Rs. 25000 and Rs. 10000 each. There would be 500 consolation prizes of Rs. 1000 each depending upon the number of entries and incremental inventiveness.

The award winning entries would also be published in Honey Bee newsletter, and included in the Knowledge Network on Sustainable Technologies and Institutions. Intellectual Property Rights of grassroots innovators will be protected. The winners of the first annual national competition will be invited to Honey Bee network and innovators meeting at Indian Institute of Management, Ahmedabad in February 2001.

How to Participate

Individuals or groups may send as many entries on plain paper providing genesis of innovation, background of innovation and innovators, accompanied by photographs and/or videos if possible and any other information that may help in replicating innovations by communities or individuals. The last date for First Annual competition is September 2000. Entries for the Second Annual Competition will be accepted all year round till September 2001.

Where to send entries

Prof Anil K Gupta

Vice Chairperson, National Innovation Foundation

P O Box 15051, Vastrapur, Ahmedabad-380 015 Gujarat.

email: anilg@iimahd.ernet.in

http://www.nifindia.org

Adv. feature

Tadi for Controlling Bacterial Disease

લોકસર્વાણી

Loksarvani

(Gujarati Version of Honey Bee)
C/o SRISTI, Post Box No. 15050, Ambawadi,
Ahmedabad - 380 015

11101 Termite Control on Wheat Crop

The termite problem is severe in the arid and semi-arid regions. Before sowing, wheat is treated with soil soaked in donkey's urine. It helps in reducing incidence of termite on wheat crop. This practice is used by Dhanabhai and other 10-12 farmers in his village every year.

(Refer HB 6(3): 12, 95; 2(1): 15, 91; 10(4): 12, 99 for practices on termite control)

Farmer: Dhanabhai Khemabhai, Village Chadarni, Dist. Sabarkantha, Comm: Kaushik Pandya.

11102 Karanj for Heliothis control

In general, Heliothis damages gram crop at pod bearing stage, which reduces yield from 15 to 80 per cent. One kg 'karanj' (*Pongamia pinnata*) leaves and bark are soaked in five litre water and boiled for half an hour. It is strained and diluted in 15 litre water. This solution is used for spraying and is highly effective in controlling heliothis pest.

(Refer HB 2(1): 14, 1991; 9(1): 16, 98; 6(1): 13, 95; 10(3): 13, 1999 for the practices of Heliothis control and see HB 3(2): 20, 1992; HB 8(2): 9, 1997 for practices using *Pongamia pinnata*)

Farmer: Kaljibhai Maljibhai Dangi, Village Sasta, Dist. Dahod, Comm: Chandubhai

11103 'Ambli' for Pest Control

Hairy caterpillar pests damage leaves. This can be controlled by 150 ml lemon juice and 150 ml juice of 'ambli' (*Tamarindus indica*) mixed in 15 litre water and sprayed on the infected field. This solution is sufficient for 0.25 ha. It is sprayed three times for effective control.

(Refer HB 2(1): 16, 1991; 9(1): 6, 1998 for practices on pest control)

Farmer: Banidan Mavaljee Gadhavi, Village Muvada, Dist. Kheda, Comm: Rajesh V Patel.

11104 'Tadi' for Controlling Bacterial Disease

In vegetable crops, incidence of bacterial and viral diseases as well as pest like whitefly and aphid affect growth and yield. In order to prevent the infestation, farmer in Zalod, use juice of 'tadi' (*Phoenix sylvestris*). Juice from 'tadi' tree (1.5 litre) is diluted in 15 litre water and sprayed on the infected plant to control pest and diseases.



(Refer HB 2(1): 16, 1991; 5(1): 15, 1994; 3(1): 7, 1992 for practices on the control of whitefly)

Farmer: Sunitaben Mukeshbhai Katara, Village Parsana, Dist. Dahod, Comm: Rakesh Chauhan.

11105 Control from Diarrhoea

1) For cattle suffering from diarrhoea. 'methi' (*Trigonella foenum-graecum*) soaked in water for 24 hours and ground with coconut is fed to animal once in a day.

Farmer: Vodiya M Somu, Karupamapalam, Village Vedaranyan, Comm: Arumanm

2) Certain kinds of fibrous food is responsible for diarrhoea in goat and sheep. This results in weakness, loss of appetite and weight. Bhupendrabhai use leaves of 'kantas' (*Strychnos potatorum*). Approximately 100 g leaves are crushed and soaked in water. This

mixture is fed for three days to the ailing animal.



Farmer: Bhupendrabhai Kaljibhai, Village Vaghad, Dist. Dahod, Comm: Ramesh Taviad

(Refer HB 4(2&3): 16, 1993; 9(2): 16, 1998; 6(1): 10, 1995; 9(3): 9, 1998 for practices on diarrhoea control)

11106 Treating Fracture by 'Khakhra'

Gemabhai Baraiya prepare a paste for treating fractured animal by mixing 500 g bark of 'khakhra' (*Butea monosperma*) and 500 g seeds of 'guvar' (*Delonix elata*). This paste is applied to the affected



area. Strips of bamboo are placed and tied on fractured bone for 10 to 12 days. Over and above two eggs are fed to the ailing animal.

Farmer: Gemabhai Lalabhai Baraiya, Village Jambudi, Dist. Kheda, Comm: Pravin Rohit

(Refer HB3 (3 & 4): 19, 1992; HB8 (1): 14, 1997; HB10 (3): 14, 1999 for practices on fracture treatment).

Casuarina Against Crop Diseases



Num Vali Velanmai

(Tamil Version of Honey Bee)

P Vivekanandan, Editor, SEVA, 43, TPM Nagar, Virattipathu, Madurai 625010, Tamil Nadu. email: numvali@md3.vsnl.net.in

11107 Remedy for coconut mite attack

A farmer in Nochikadu village uses *Aloe vera*, *Vitex negundo* and neem cake against eriophyid mite in coconut. He



applies these ingredients around the trunk of the tree followed with the covering of cowdung slurry.

(See HB 10(3): 8, 1999 for other practices to control mite)

Farmers: V.S. Samyappan, Nochikadu, Varanavasipalayam, Merku pakuthi P.O., Kunninathur

11108 Nutritive formula for healthy calves:

Farm manager of Gloria land, Aurobindo Ashram has been treating animals with the following ingredients in order to effect fertility / conception and also to beget healthy calves: Leaves of 'palakodi' (*Leptadenia reticulata*), 'kernel' of 'Mango' (*Mangifera indica*), Roots of 'aswagandha' (*Withania somnifera*), and leaves of 'malaivembu' (*Melia azedarach*). Each of the ingredients (30 g) are pounded well and administered for 10 days after the animal is inseminated.

(See HB 7(1): 7, 1996; 8(1): 11, 1997; 6(2): 15, 1995; 10(3): 8, 1999 for practices dealing with begetting calves)

Farmer: Sri. Ashok Kunde, Gloria Land, Aurobindo Ashram, Pondicherry - 2.

11109 For treatment with Aswagandha and Datura

Mallappa treats seeds of ragi and jowar by using 'aswagandha' (*Withania somnifera*). He uses 250 g roots of Aswagandha and 50 g of Datura (*Datura metel*) leaves and pounds them well by adding little water. This diluted mixture is sufficient for soaking one kg of seeds. The seeds are dried in shade before sowing. He has been practising this for the last seven years. Villagers of Karanaghatta village have started following this practice. The treated seeds produce vigorous seedlings free from pests.

(See HB 8(3), 8: 1997, 9(2), 17: 1990 for other practices using 'aswagandha')

Farmer : G. Mallappa, Karanaghatta, Hunasaghatta, Ajjampura (via), Tarikere Taluka.

11110 Neem and Ash for seedling treatment:

Before transplanting paddy, seedlings are kept in small plots of standing water mixed with ash and pulverised neem seeds. For a plot size of 15 sq. feet, half-a-kilogram of neem seeds and one kg of ash will be sufficient for mixing with water so as to accommodate 50 bundles of seedlings at a time for a period of half-an-hour to one hour. Treated seedlings produce healthy crop and free from pest and disease. This is a traditional practice followed in Perambalur District of Tamil Nadu.

(See HB 2(1), 16: 1991, 5(3), 12: 1994, 8(4), 3: 1997 for the use of Neem and ash to control paddy leaf caterpillar)

Comm: Selvarani, "CROP"- an NGO, Valikandapuram, Perambalur Dist. - 621 115.

11111 Casuarina against crop diseases

1) Twenty kg leaves of Casuarina tree (*Casuarina equisetifolia*) are boiled in

water for 20 minutes, thereafter cooled and filtered. It is sprayed against fungal / bacterial disease of crops in one acre. It is being practised in the Kurinji Organic Farm, Batlagundu (Dindugul District).

(NAPDB: Leaf decoction of *Casuarina equisetifolia* shows anti fungal activity. Ref: Gupta.et.al.,1970, Proc.nat. acad. sci.india.sert. B 40 1 : 6-8.)

2) Five kg of Lantana (*Lantana camara*) leaf are soaked in five litres of cow urine for three days. Then it is diluted in 90 litre of water and sprayed against fungal disease.

(See HB 7(1), 7: 1996, 8(1), 4: 1997, 10(4), 7: 1999 for the use of *Lantana camara*)

(NAPDB: Leaf extract of *Lantana camara* active against most fungal pathogens. Ref: Sharma.et.al. 1979, Indian drugs pharm Ind 14 (1): 3-6)

Farmer: Sri. S. R. Sundara Raman a farmer in Satyamangalam Village (Erode Dist.).

11112 For Swelling in the Udder

Few days after calving, dairy cows suddenly stop milking due to swelling in the udder. To treat this, pulverised quartz



stones are passed through a muslin cloth. After that it is mixed with butter and smeared over the udder. It is applied twice a day and continued till the animal gets relief.

(See HB 4(4), 17: 1993, 8(4), 17: 1997, 10(3), 14: 1999; 10(4): 7, 1999 for other practices on swelling in udder)

Farmer: Sri Muniappa, Centadakutta, Arukonam (via), Royakotta Taluka, Dharmapuri Dist..

Inducing Conception with Herbal Treatment



Hittalagida

(Kannada version of Honey Bee)
T N Prakash, Editor, Hittalagida
Dept. of Agri. Economics
University of Agri. Science, GKVK
Bangalore - 560 065 Karnataka
email: hittalu@bgl.vsnl.net.in

11113 To induce conception

Sometimes cows fail to conceive. In such cases, a locally prepared tonic/medicine is given to animals after siring. Following herbs are mixed together and powdered: *Tinospora cordifolia*, bark of *Cassia fistula*, tender leaves of jackfruit tree, roots of *Plumbago zeylanica* and leaves of *Clerodendrum inerme*. This herbal mixture is mixed in cow's milk along with jaggery and fed to the animals.

(See HB 10(4): 15, 1999; 6(4): 5, 1995; 8(2): 12, 1997; 5(4): 13, 1994; for similar practices on facilitating conception)

(NAPDB: Fruits of *Cassia fistula* are claimed to be used as an antifertility agent / abortifacient. Ref : Malhi.et.al.1972 Q.J.Crude.Drug. Res.12 : 19-22. No information regarding leaf & bark.)

Farmer: Honnegowda, Comm: Y.L. Krishna, 10th std., Govt. High School, Krishnayana Doddi, Kanakapura Taluka, Bangalore.

11114 To ease stomach pains

General symptom of this problem is that animals tend to become dull and inactive.



Rice cooked and mixed with pumpkin is fed to the cattle along with 10 g of small

chillies and 10 g of cloves. Besides back of the animal is massaged with castor oil and a heat treatment is given to the animal using copper vessel filled with hot water.

(See HB 9(3), 11: 1998, 10(1), 14: 1999, 7(2): 16, 1996 for practices on alleviating stomach pain)

Comm: Lakshmi M.G., Maralavadi, Kanakapura Taluka, Bangalore.

11115 For treating boils on cattle skin:

Boils formed on the skin of cattle cause lot of irritation to animals. The following remedy is practiced by villagers of Kanakapura taluka.

Seeds of *Croton tiglium* are crushed in curd and the paste is applied on the skin of cattle suffering from boils. Five hours after the application it can be washed off.

Farmer: K.S. Hemavathi Comm: Lakshmi M.S. Doddamaralavadi village, Kanakapura Taluka, Bangalore.

Contd... on page 20

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Advt. feature

The fourth *Shodhyatra* took place from 26th December 1999 to 2nd January 2000. started from Neelpara village and ended in Nani-Khakhar, village of Kutch district. The journey covered 36 villages, 4 talukas and a distance of about 230 km.

We wanted to learn about the struggle of local communities for their survival against the adverse conditions. Though there are farmers who have ability to experiment, innovate and generate creative solutions to local problems, but somehow they have not become the point of reference. To overcome the societal inertia and generate respect for local knowledge we pursued *Shodhyatra*. On the way number of students, farmers, men and women joined the *Shodhyatra*. Biodiversity competitions were organised among children during *Shodhyatra* at eleven primary schools. Three hundred and seven boys and one hundred and seven girls participated in these biodiversity competitions. These children were asked to bring as many specimen of plants as possible and their uses and the response was overwhelming. At village, Chandiya of Anjar District, the boy who received first prize brought one hundred and ten plant specimen and was aware of their uses. In the same primary school the second prize went to a girl who had brought hundred specimen of plants and knew uses of ninety four plants. Similarly a small competition among the women to scout an expert in embroidery was organized. Prizes and certificates of recognition and honour were given to outstanding women. During the *Shodhyatra* more than 56 local innovators were honoured and gifted with certificates.

Many innovators also participated in the *Shodhyatra* and they explained about their respective innovations to the people we met. The idea being that if they could innovate, so could others. This way SRISTI tried to build confidence of local people in their ability to develop technological solutions on their own.

Indian Science Congress 2000

During January 3-7, 2000 at University of Pune, hundreds of renowned scientists and Noble prize winners assembled to discuss what should be the approach in the next



millennium to see India moving ahead in various fields of Science and Technology. SRISTI participated in the science congress along with its sister concern GIAN which had put up a stall by the name of 'Innovative India'. Several innovations from motorcycle driven Santi, innovative pulley to three wheel tractor and tilting bullock cart were displayed to the public and scientist community. Public in general and students in particular showed overwhelming interest in Honey Bee multimedia, multi-language database touch screen kiosk. This was the first time in the history when knowledge rich farmers shared the dias with widely acclaimed scientist and to top it all managed to steal the show. Print as well as electronic media gave wide coverage. It was an event which made everyone realise what grassroots innovators can accomplish.

Second Global Knowledge Conference

The Second Global Knowledge Conference was held in Kuala Lumpur, Malaysia during March 7-10 2000 and was organised by the World Bank. More than 500 persons including scientists, head of various institutions, non-governmental organisations and their representatives participated in this conference. Top level policy makers from all over the world were also present. Panel discussion and exhibition were the main features of this conference.

SRISTI's multi-lingual, multimedia database on grassroots innovations was displayed. It received gratifying response from participants and students. Winners of First International Competition for scouting grassroots innovations in survival technologies and institution shared the IFAD and SRISTI's stall and displayed their indigenous techniques which were highly praised. Malaysian government officials were moved by the Honey Bee database and announced that they will select one village and do everything to promote grassroots innovations. Similarly representatives of UNESCO agreed to display Honey Bee database on their website.

Annual Meeting of Honey Bee Network

The annual meeting of Honey Bee Network was held at IIM Ahmedabad on 20th February, 2000. The meeting was attended by more than 150 members of the network including grassroots innovators, representatives of voluntary organisations and collaborators for regional versions of



Honey Bee. During this meeting, collaborators shared their experiences. The meeting had wide ranging discussions on value addition, indigenous knowledge and protection of IPR. The central point of discussion was network's aim to bring together creative people engaged in development of local ecological, technological and institutional knowledge for sustainable development. Prof. Jahar Saha, Director IIM-A honoured the creative innovators gathered from the entire country. Prof. Bakul Dholakia, Dean, IIM-A honoured people for their entries in the competition for spotting grassroots innovators.



Ancient and Medieval History of Indian Agriculture

Editors: S L Choudhary, G.S. Sharma, Y L Nene, Publication division, Rajasthan college of Agriculture, Udaipur

lege of Agriculture, Udaipur

This book is based on the proceedings of the Summer School held from 20 May to 17 June 1999 at Rajasthan College of Agriculture, Udaipur, sponsored by ICAR. It has forty nine papers covering areas pertaining to ancient history of agriculture such as agriculture in ancient India, Surapala's Vrikshayurveda, Krishi-parashara, history of irrigation, utilisation of biogas slurry, and energy for environment and sustainable development etc.

Paper entitled "Ancient Agricultural Practices and Scientific Basis" by R. Jayarajan provides important insights on crop management like after the harvest of rice crop, stubbles are burnt before preparing the field for the next crop. This practice reduces the inoculum of *Leptosphaeria sahrnii* and hence stem rot incidence in subsequent rice crop is reduced drastically.

The first known method of grain storage practiced by man was in underground pits for storage of large quantities of grain. Scientifically this can be explained on the basis of depletion of oxygen and increase in carbon dioxide. These conditions are adverse for survival of storage pests. Pp 37

Number of papers in the book are based on the book Krishi-Parashara which reflects ancient history related to meteorology compiled in Sanskrit by a sage named Parashara. This book deals with the topics of prediction of rainfall, management of cattle manure, seed collection and storage and weeding. On water retention, the paper by Y.L. Nene entitled "Krishi - Parashara - a commentary" outlines that even such an

ancient text recommends construction of bunds to retain water. Bunding has not been recommended in low-level fields since there would be adequate moisture.

Y L Nene in his paper on Seed Health writes on the virtues of cow dung.

Cow dung has been used in India for treating seeds for several millenia and continues to be used by small farmers even today. Seed health scientists today, who have been the products of western education (including the author) have consistently ignored the practice of using cowdung dismissing it as something not based on scientific reasoning, although cowdung manure has been unhesitatingly accepted as a material required for maintaining productivity of soil. Pp 97.

He also mentions that the material recommended for seed treatment were milk, mustard, cowdung, honey, sesame and lotus. R.C. Saxena & S.L. Choudhary in their paper entitled "Plant protection in Ancient India and its Role in the Present Era" cites several ancient recommendations for control of insect pests. There are two paper on origin of camel and importance of camel milk by M.S. Sahani. It is an interesting book worth reading by every student of traditional knowledge.



Alternatives to Pesticides in Tropical Countries-sustainable agriculture-food security with food safety


A T Dudani. Vigyan Prasar, C-24, Qutab Institutional Area, New Delhi. Price Rs. 150

This book is a testimony to the enormous research work done by the author on the subject. Dividing into 15 chapters the book addresses issues such as sustainable agriculture, integrated pest management and technologies for effectively reducing the dependence on pesticides, organic

farming and vermicompost. An extensive bibliography of over 780 references makes this a ready manual on the subject. The first chapter presents a background on the use of pesticides, tracing the gradual increase in both use and production of pesticides. The Indian context is considered as a particular case. While outlining the hazards of overuse of pesticides, the author explains the importance of the FAO code and other related guidelines to prevent unsuspecting users from succumbing to the misuse of advertising media, especially in countries with low literacy. He adds:

The power and influence of the chemicals manufacturing lobby and the powerful vested interests is also reflected generally in marketing and advertising, specially on the TV in as aggressive a manner as they please. This is largely because of the fact that while the Indian Government is officially, on paper, committed to the FAO code, in practice it is clear that there is no intention of enforcing any of the provisions of the code. Pp 104.

In the chapter entitled "Why opposition to pesticides" author writes that pesticides are general poisons and not selective in action for insects as well as humans or animals. They have power to kill, deform, mutate, induct sterility or cancer. For instance, less than one out of a 1000 kinds of insects are pests, but pesticides kill indiscriminately including beneficial soil organisms.

Chapter entitled "Pesticides Breakdown, Resistance and Resurgence" is an eyeopener of sort. Author writes that breakdown products are less effective and far more toxic than their original counterparts. Author has also brought out effectively how the pesticide use is going to affect our biodiversity. He has drawn extensively from the world experience to show that there are excellent alternatives of various kinds leading to farming without pesticides. The book has come not a day too late and is a must read. 

Learning from Lizards

Dr Salomi Topno

Centre for Women's Development, Tapkara Road Torpa 835227, Dist. Ranchi, Bihar, India

Once my colleague, Dr. Dilip Kumar Nayak, was sitting under a tree named 'ber' (*Zizyphus mauritiana*). Suddenly a lizard (Calotes) fell down just in front of him which drew his attention. The lizard keeping still for a while ran to a nearby bush where it rubbed its body against herb (*Amaranthus spinosa*) and again climbed up the tree. Dr. Nayak kept observing much intensively and saw a nest of wasps in a branch. The lizard was trying to eat the eggs, but wasps had stung it.

After a month, one boy fell prey to wasps. He was very badly stung and had an intolerable inflammation. The boy happened to come across Dr. Nayak asking for some possible relieving stuff. Dr. Nayak referred the boy to the very plant telling him to apply it anyhow. The effect was good, the boy felt relieved.

(You have this time sent an interesting incident about learning from lizards. Keep us informed about such unusual incidents. :Ed)

Congratulations!

Maneka Gandhi

Minister of State for Social Justice and Empowerment, New Delhi, India

Congratulations on the 10th anniversary of Honey Bee. I am glad to note your encouragement to the rural handicapped sector.

I would have been glad to have participated in the Award ceremony. However, you have my very best wishes for the occasion and your ongoing work to promote local innovation.

(Many thanks. We look forward to your continued interest and involvement in Honey Bee philosophy and network. We have implemented some of your earlier suggestions about animal care and protection. :Ed)

Peerless Magazine

Debabrata Pal

C/o D C Pal, Vill & P.O. Hatthuba, District 24 Parganas, West Bengal - 743269 India

Honey Bee is a peerless magazine in the realm of Indigenous Knowledge. I came



to know about Honey Bee for the first time from an article 'Tried and tested' by P.S. Sandhu published in 'Down to Earth' dated 15-6-93 and then from the latest issue of the newsletter enclosed with your letter. I am enclosing an article on rat control for publishing in your much esteemed magazine.

(We really appreciate your contribution. Please do provide us name and address of informants. After all such practices may have evolved in long past, but they may not be continued by entire community. Is it true? Do only few practice it? Why have they continued when most others have left them. :Ed)

Can an Ant help the Elephant?

D K Bagchi

*Nodal Research Centre
27, Baker Road, Calcutta - 700027 India*

The Council of Nodal Research Centre has decided to take up the responsibility of publication of 'Bengali Version of HB'. As suggested by our Council I am writing in more details about our comprehensive plan and invite your suggestions so that an understanding is reached before launching the publication.

(i) This will be a newsletter of NRC containing materials from HB as major part. (ii) First issue will cover materials from HB along with few innovations scouted from our state. This will be free

of cost. The objective of SRISTI and our organisation for publishing such version will also be elaborated in this issue. (iii) During the first year two to three issues are planned although from second issue onward we will keep a price tag. (iv) Our working group meanwhile will try to be in touch with grassroot innovators for collecting information at the state level. (v) Financial assistance will be necessary at the initial phase till it becomes self sustained. We will let you know about the estimated cost which we will try to keep reasonably low (vi) Our working group has recently started work and will take few months to come up with the first issue.

(It is an excellent start of an idea that was incubating for the last seven to eight years. Looking forward to see revival of wide spread interest in learning from grass roots. "Mass line" concept of Mao tse Tung, conveys the idea of mutual learning very well indeed. :Ed)

Interest in Tribal Innovation

Manager (Admin.)

*Enfield Agrobase Private Limited
Viswapriya, 2 first cross road Kasturba Nagar, Adya, Chennai - 600 020, India*

The article on 'Scaring Wildboars' in 'Honey Bee' Vol 10(4), October-December 1999 is of interest to us. More details are required showing how the stone tied to a rope is released by the boar disturbing the wire which results in the bursting of cracker lying underneath the stone.

Please also let us know the addresses of the farmers of Chonampara village, Kerala, who are using this device to enable our representatives to visit their farms and see the device.

(Request like yours are very welcome. If you can develop this idea for others, please do write to us so that we can tell Kani community about their innovation which helps solve problem of a big corporation. :Ed)

Seed Variety Competition

Sabarmatee

Sambhav, Rohibank, Orissa - 752090, India

We finished this year's competition on 7th March. So I was late in compiling the report for you. Few friends from different parts of the country have shown interest to know more about it. Sending herewith the report and few photographs for you. Thank you for recognising/appreciating the effort. Let Honey Bee hum everywhere.

(We will publish your report in the next issue. Please keep it up. Efforts like yours need to be replicated. :Ed)

'Jamun' a Herbal Purifier

Sri Lalit Das, IPS

Superintendent of Police, Jagatsinghpur, Orissa

Contd... from page 17

11116 Steps taken against indigestion

This problem is commonly found in calves. About half litre of castor oil is



fed to calves so that they can pass motion to clear their stomach. 100 g of rock salt, dry ginger powder, powder of *Andrographis paniculata* are mixed together and stored in bottle. This mixture is fed to the animal at intervals.

(See HB 8(2): 7, 1997; 8(4): 11, 1997; 6(2): 10, 1995; 9(3): 11, 1998; 10(4): 9, 1997 for practices on indigestion)

Farmer: Venkataramanyya, Comm: Bhagya, H.E., 9th std., Govt. High School, Herindyapanahalli, Kanakapura Taluka, Bangalore rural district.

I have been receiving all the copies of Honey Bee which are quite interesting. I faced a super cyclone on 29/30-11-99 at Jagatsinghpur District where I am presently working as S.P. Jagatsinghpur. I would like to share an innovation. My personal pond got damaged because of decomposition of rotten leaves. The servants working had put few logs of 'jamun' Blackberry trees inside the pond. When enquired, they answered that logs of Blackberry trees acts as a cleanser and purifies the water. There are also other trees whose branches can be used to purify water. It acts slowly but in the same manner as putting lime to purify the water.

(How much I admire your 'Sujbhuj' to take the time off and send this idea to Honey Bee! Please let us have the name of the thoughtful servants of your whose idea it was. If s/he have more idea like this we will carry a feature on such survival technologies. Please do write to us. We hope the cyclone victims have now recouped their spirit. :Ed)

Save us from Bats !

Yasmine Mirza

Terene Fibres India Pvt. Ltd., Thane Belapur Road, Khoparkhairane, Navi Mumbai 400 701

We understood from a colleague of mine that you have a database on indigenous knowledge system. I am writing this with a peculiar request. Ours is a 150 acre industrial cum residential plot with a lake, lot of trees, birds, etc. Of late our complex is invaded by bats - they have made a home on almost all the trees. Earlier for years there were only few hundred parking in two or three trees. We do not know the reason for the sudden spurt in its population in our complex. This has now become a nuisance - lot of noise day and night, spoiling the pathways, swimming pool and other areas by its excreta.

We would appreciate if you could provide us any natural technique of keeping these bats away, if available, from your database.

(We request our readers to respond. : Ed)

No Joke by Gandhiji: Medicinal use of Cowdung

R. Radhakrishnan

Sukkampatty P.O, Thadicombu, Didingul 624 709 Tamil Nadu, India

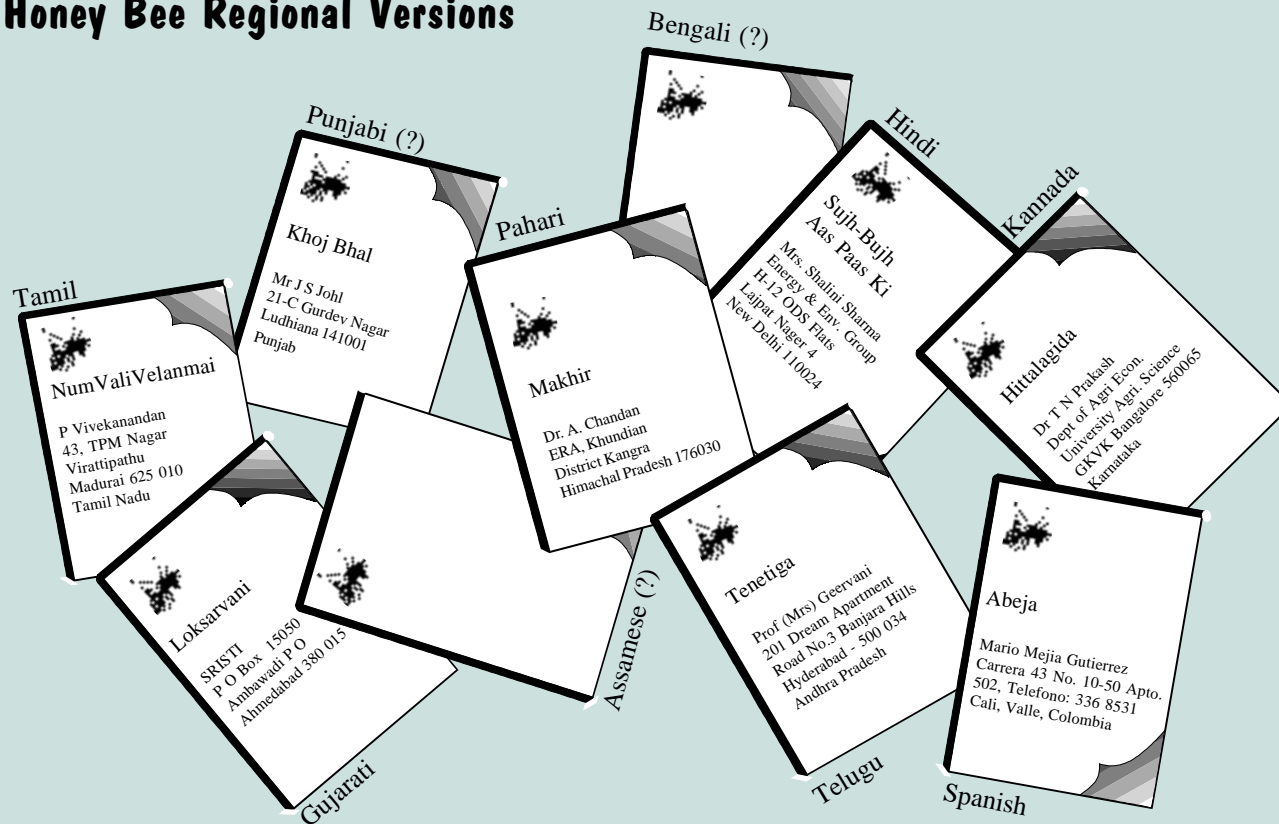
Patrick Quinn was Jailor at Yeravada Central Prison, when Gandhi was in that prison. His talk on Gandhi was broadcast on BBC, London in 1969. He narrated that

"I used to suffer with nose bleeding and one day, in the morning, holding a handkerchief to my nose I talked to him. He asked me what the trouble was, and I told him. He said, well, if I give you



you something, will you take it? I said, yes. And he said, well, let me write a letter to Miraben or Kasturba, in Ashram, and I will get you something. After about a week or two Miraben arrived for an interview and handed him, among other things, a little box about the size of a match box. When he got back to his cell, he said, here is this box with powder in it. Every morning when you wake up, sniff this and again at night. I took the box and after about a week he asked me how the nose bleeding was. It seemed all right, I said, what was the stuff that you gave me? He would not tell me, but started laughing. It is powdered cowdung. It's been dried in the sun and it has medicinal properties, and though he thought it was a huge joke, it did stop the nose bleeding."

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