

Honey Bee

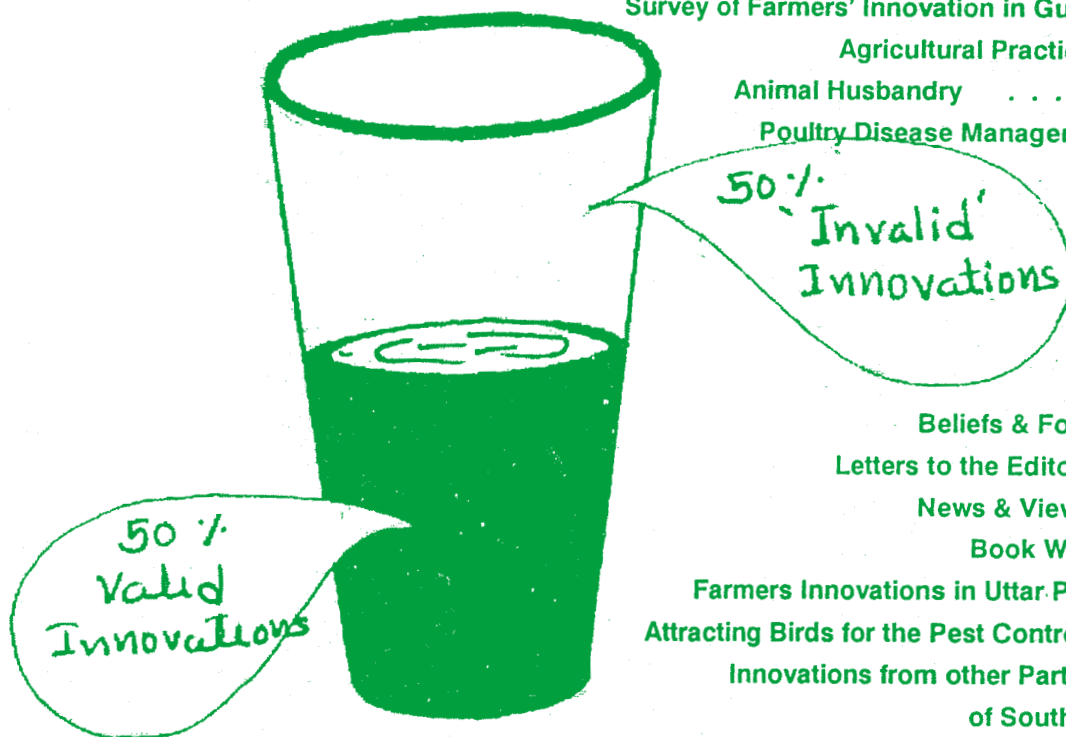
Volume 3, No. 3 & 4 Aug. - Dec. 1998

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An informal quarterly newsletter to document innovations produced by farmers, artisans and farm workers; generate debate around sustainable alternatives based on people's knowledge system among farmers, scientists, political leaders and social activists and lobby for protecting intellectual property rights of grassroots innovators.

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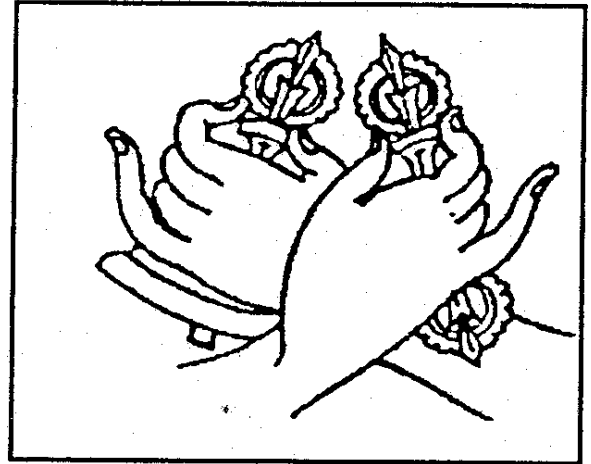
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We present to the readers this combined issue of Honey Bee (No 3 and 4) with the hope that their support to this collaborative endeavour will continue to increase. We have been highly encouraged with last three years progress. The network has grown to fifty eight countries. Within India, we have got new friends who are offering to build upon Honey Bee philosophy and spread the ideas. Our friends range from a ten years old student from Karnataka to scientists, poliicians, educationists to voluntary workers and farmers from different parts of the country.

Two new local language versions are likely to be added soon. Marathi (Dr. Winnin Perira, Centre for Holistic Studies, 79 Carter Road, Bandra, Bombay - 400 050) and Malayalam (Mr. Jacob Mani Mannothe, Advisory Office-Rubber R&D Centre for Rubber, United Planters Association of Southern India, (UPA SI), Union Club Road, Kottayam 686001, Kottayam). I hope the readers interested in these languages would get in touch with Dr. Winnin and Jacob.



There has been some delay in posting this combined issue. With 1993, we hope to be more prompt. I would like to draw the attention of readers to two particular comments by Mukundan and Winnin. Both of them raise some very fundamental questions about the relationship between what Winnin calls, institutional science and folk science or farmers' science.

Mukundan feels that we should not give a sense of superiority to the modern science by getting farmers' practices commented upon by agricultural and veterinary scientists. Within wonders about the feeling of the farmers on hearing that fifty per cent of their practices were considered invalid by the scientists.

I agree that without any experimental validation or a precise causal explanation, dismissing a farmer's innovation may not be very scientific. And at the same time, I realize the need for a dialogue between institutional scientists and the farmer innovators. It is not important for us to resolve the basic differences in different world views so long as dialogue is possible. I also believe that reductionism is as important as holism.

To illustrate, let me narrate a story from Mahabharat, an Indian epic. Dronacharya was a very reputed teacher having an ashram (kind of residential school) and was known as a top expert in archery. He had five chosen disciples from royal family known as Pandavas. One day, he took them all for a test. He hung a small bird on a tree and asked each one of them to aim at the target and explain to him what did they see. When the turn of the eldest Pandav came, he said that he saw the entire cosmos, as a part of which he saw the sky, the earth, the tree Dronacharya asked him to leave. When second Pandav came, he said that he saw the whole tree, the branch, the bird, etc... Dronacharya asked him to leave also. Then the turn of his choicest disciple, Arjun said that he could see only the eye of the bird. Obviously, Yudhishtar the eldest Pandav who saw the entire cosmos believed in holistic vision. On the other hand, Arjun saw the eye of the bird and thus was a reductionist. But, for keeping a balance in society, we need both. Holism to understand to connections between different parts and reductionism to understand the identity of each part. For building any theory, drawing boundaries is necessary. Reductionism becomes inevitable in the process. I suppose both the world views and necessary for Honey Bee philosophy to grow. If we didn't have modern reductionists science, the cumulation of knowledge and development of different technologies would not have been possible. At the same time, if we emphasize this view too much, we do lose sense of the perspective. The harmony with nature is impossible to achieve through just the reductionists tools. But to repair various kinds of damages already done, to add value to the innovations of the people at the grassroots level, the



reductionists science with a holistic perspective can help. We need specialists and we also need generalists.

I also request readers to note some change already taking place in the way "institutional scientists" look at the farmers' innovations. Once we drew their attention to the views of Mukundan and Winnin, many of them have preferred to call the ideas with which they could not agree as hypothesis rather as unworthy of attention.

Another instance, more tangible in nature is the initiative of Gujarat Agricultural University to organize a full fledged seminar on Compiling Farmers' Innovations on Sep. 14, 1992 at Sardar Krishi Nagar campus (see next issue...for details). Farmers very critical of many of the dominant tendencies in formal science were not only invited but listened to with great attention and respect. Similarly farmers also appreciated that a dialogue was taking place to identify more sustainable options. I hope other

universities will also take initiatives to pursue these ideas.

We dedicate the issue to this debate and hope that readers would get back to us with different ways of looking at this eternal question.

In the next issue, I will discuss with you about SRISTI (Society for Research and Initiatives for Sustainable Technologies and Institutions) so that you could contribute in many more ways to the idea of Honey Bee. This society would concentrate on finding ways of influencing natural science research in agricultural and other universities through post graduate students and others. It will also organize workshops to familiarize the interested scholars with our data base on farmers' innovations and discuss methodological aspects of designing proper experiments to validate the farmers' innovations.

I would like to thank Sumati Sampamane who has helped us edit several sections of this issue. We look forward to more volunteers to shoulder various responsibilities in producing this newsletter. You could send book reviews, interesting innovations, news and views about innovations and local or global policies affecting the rights of farmers, fishermen, artisans, etc. You can also contribute by critiquing what we do as Winnin and Mukundan have so ably done in this issue.

Looking forward to hear from you.

Anil K Gupta

Scientist's Comment on Farmers' Plant Protection Practices

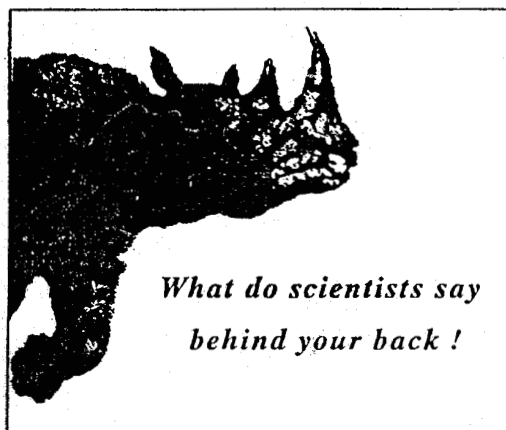
Dr G M Patel¹ wrote to us about some of the plant protection practices that were published in last two issues of Honey Bee, which he believed merited further scientific verification such as: (1) use of lime and butter milk on the larval pest of cabbage; (2) use of the leaves of 'Dlumas' (*Combretum avelifolium*); (3) use of the mixture of water and kerosene for the control of 'Lunkani'; (4) fumigation using bean pods to control aphids; (5) use of the roots of 'Nagli' (*Eleusine carecana*) for termite control; and (6) the effectiveness of calotropis in controlling 'Katra' (*Amsacta moori*) and 'Talkidi' ants.

1. 'Naffatia' Leaf Extract Used for Pigeonpea Pests

The extract of this plant (*Ipomea* spp.) was tried at Gujarat Agricultural university, Anand against *Heliothis*, *Spodoptera*, *Amsacta* and *Plutella* but it was not found effective. (Could we get information on sample, source, parameters and design of experiments, treatments etc. so that we can compare the same with farmer's recipe : ED).

2. Bajra Beetle: Blister Beetle

Kerosene has been recommended in the form of an emulsion in water for treating plants afflicted with sucking insects but not for a bajra beetle. The preparation of the emulsion is somewhat tedious (shouldn't we evaluate this "tediousness" with the



cost and "effectiveness" of the alternatives ? :)

3. Trapping Cotton Pests through Sugar Solution

Fermented carbohydrates attract many lepidopteran insects (moths and butterflies) and concentrated sugar solution which is sticky enough for use in trapping these insects (Why haven't we recommended this as a technology ? : ED).

4. Termites: Incorporating Tobacco into the Soil

Tobacco contains nicotine which is a powerful contact insecticide. It is used in the form of tobacco decoction or nicotine sulphate (readily available in the market) for soft bodied insects like aphids, whitefly, jassids, thrips etc. Thus when tobacco incorporated in to the soil, comes in contact with the termites, it perhaps poisons and kills them. Since it is the waste material that is incorporated into soil, the technique is worth verifying.

5. Physical Methods for the Control of 'Hungo' (Blister Beetle) in Maize

Soaking the insects in kerosene perhaps gives off a bad odour that has a repellent effect- when treated beetles release some alarm pheromones to warn its fellows of impending "danger". This needs to be verified.

6. Aphids: Ash for Control

Ash acts as a mechanical measure that makes fine scratches on insects body. Water is lost through these scratches and the continuous dehydration results in death of injured insects.

7. Cactus trap for tobacco pests

Cactus of the *Euphorbia* spp. and its leaves are eaten by the Gujarat Hairy caterpillar (*Amsacta moori*) Farmers in Kadi taluka put small pieces of cactus on the borders of fields to lure the pest away from crops. The efficacy of this practice, however, needs to be evaluated. (Please do write to us whenever experimental results are available:ED).

8. 'Lashkari': By Using Kerosene

'Lashkari' is a *Spodoptera litura* larva which feeds gregariously in its initial instar stage. It generally hides in cracks of the soil or under debris during day and feeds at night. Flooding suffocates the larvae in the cracks. Kerosene does have some insecticidal property so the addition of kerosene may increase the effectiveness of flooding. Spraying of kerosene needs special precautions because of its toxicity to the crop itself.

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Readers' Reaction on "Scientists' Comments" Given on Farmers' Practices in Honey Bee Vol. 3 (1) & (2), 1992

T. Mukundan¹

I am not clear why scientists views are sought on each of the farmers innovations. All the farmers Knowledge and innovations in a variety of areas are apparently examples of traditional knowledge and successful innovations which are seen today. The test of any knowledge or innovation lies in its ability to solve a problem in real life. There seems to be no need for these innovations to be subjected to "Scientific" tests by our scientists. Isn't it enough that an innovation works and helps the farmers in their daily lives ?

The scientists seem to be telling us whether these innovations are "Scientific" or not according to the tenets of modern/Western science. Some practices have been labeled "not scientific". It is not always clear what this means (e.g. practice no.3213 - Reducing food poisoning). On what basis do the scientists say this practice is unscientific ? Does it work? How well does it work and under what conditions? And if it does work then this may only mean that the scientists do not have the appropriate framework to understand this practice. Similarly, under some practices, the comment is that these practices "need verification". If a practice works in the experience of the farmers, what does "verification" mean ?

Sometimes it appears as if the comment of the scientists is very insufficient. Take example, practice no. 3208.2 - Use of

Calotropis gigantea leaves in the disease 'Valo'. The comment that application of hot leaves of Calotropis give "hot fomentation to muscles" does not seem to explain much. The same comment is given for practice no.3208.1 - hot water bath also. If mere hot fomentation was adequate then we have to understand why Calotropis leaves are used in particular. Here is an instance of the inadequacy of modern science in explaining traditional knowledge. It appears that the heated leaves of 'Arka' seems to have the property of removing 'Vata'. This would also indicate that the disease 'Valo' is perhaps a disease caused by the aggravation of 'Vata' in the body. I do not have any expertise in this area. It would be necessary to get the views of Ayurvedic physicians on these points.

And finally some of the comments seem to say the obvious. For example, practice no.3112 - Constipation in animals is cured by a paste of the leaves of 'Dikkamani' and 'Bendval'. The comment from the scientists merely says that these plants successful and this treatment cures constipation trouble within a day then obviously the plants have "laxative action".

I am taking these comments to point out on a fact which I am sure is well known to you. Modern/Western science cannot adequately understand the knowledge and innovations of Indian farmers. Their knowledge and innovations are best understood in the framework

of Indian science of Ayurveda/ Vrکشayurveda, since it is perhaps in this framework that our farmers gather their knowledge, perform their experiments and come up with their innovations. I think it would be very worthwhile to ask someone who is an expert on Ayurveda/ Vrکشayurveda to explain these practices and how they work. Perhaps you can have a regular column on the comments of Ayurvedic experts on the innovations of farmers. (By all means! But several Ayurvedic scholars to whom we have written so far, have not responded. We hope readers will help us to find volunteers.: Ed).

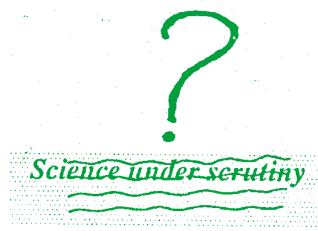
There seem to be many texts of Vrکشayurveda which describe traditional practices in agricultural/ horticulture. It is possible that all these practices do not survive today. Our farmers may have lost touch with them as a consequence of the policies of our State, which does not seem to have encouraged any revival of the traditional practices. Our modern scientists can help us recover these practices by conducting experiments in the agricultural universities and in the field with the cooperation of our farmers. Such experiments can verify that these lost practices indeed work or determine under what conditions these practices work today. Such practices can then be recommended for adoption on a large scale. This can be a great service our agricultural scientists can do to the farmers today. This will perhaps add to

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the knowledge and the confidence of our farmers by helping them recover many valuable practices lost to us.

I am not trying to find fault with the scientists who are taking a lot of interest in the practices of the farmers. The problem seems to lie in the relationships modern/western science has to traditional knowledge. I am sure you and your colleagues will appreciate the spirit in which my comments are made. (We strongly

encourage other friends like Mukundan to feel free to write critical notes. It is not necessary for us to agree on our approaches for pursuing a dialogue with open mind. Mukundan, please keep it up.: ED).



replace the peer group for farmer innovators.

There is a need to tell farmers why their innovations work, since this could help them use the theory to find quick solutions in other situations. Ofcourse, not all so-called traditional technologies are good, in their origins and/or in their results. Perhaps, this is where institutional scientists can help, though I am still doubtful when one considers the need to take into account all the environmental as well as social effects of any technology.

Winin Pereira's² Arguments on Scientists Comments

The comments on 28 animal husbandry practices checked by the Technical Committee on Livestock and Veterinary Science (TCL) in Vols 3.1 and 3.2 of Honey Bee, could be categorized:

11: were innovative, explanation was given and unhesitatingly recommended;
9: explanation of action was given; (out of 11)
1: effective, no explanation given;
1: useful but needed more investigation;
1: partially innovative, partially explained;
8: require investigation/verification;
4: rejected;
4: no comment.

One can say that 11 or 37% have been confirmed, but by saying that the explanation is known, would it imply that it is not really innovative? Three more have been found useful or partially innovative, needing more investigation. If these can be added to the confirmed lot, then it rises to 14 or 47 per cent.

Eight require investigation, which means that there is a doubt

about their efficacy, while 4 have been rejected outright, which adds upto 12 or 40 per cent. For the remaining four there is no comment, making a total of 53 per cent with a negative reaction. What would be the effect of communicating these 50 per cent negative comments to their respective innovators? No doubt the sample is very small but it gives some idea of the extent of the problem.

The rejections have been made on the basis of the present state of institutional knowledge, but this is expanding as it takes into account more interactions with the environment and other non-specialist effects. Many practices which were earlier thought completely irrational are now explainable in Western scientific terms.

What do we mean when we tell farmers that institutional scientists appreciate their work? Does it signify that it is important that such scientists check their research and verify it? Would this give the farmers the impression that the Western scientific system is "better" than theirs? The institutional scientists would then

(We agree with both, Mukundan and Winin and yet feel that the bridges between systems of knowledge are essential. Multiple heuristics to appraise any insight is an interesting expedition. It can cause injury if, as Mukundan suggests, some worthwhile practices are subjected to inappropriate protocol of trials. Winin recognizes the need for theory development and communicating "why" to farmers. The ceteris paribus condition with which reductionist philosophy makes it possible to find "why" of a technology is useful as a tool. While the responsibility of finding "why" should not rest only on the shoulders of what Winin calls "Institutional Scientists" but why not? Howelse will "institutional science" be put under pressure of the performing alternative scientific concepts? It may also be added that while much is talked about Farmers Participatory Research, we are yet to come across many NGOs (Academy of Development Science, Karjat is an exception) which pursue experiments on farmers' innovations. We hope other readers will join the debate triggered by Mukundan and Winin. We also hope that the so called 'Institutional Scientist' will join the issue and write back: Ed (please see editorial note also).

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Gujarat Agricultural University Puts Farmers' Knowledge on a Firm Agenda!

Gujarat Agricultural University (GAU) hosted a seminar in collaboration with the Honey Bee on "A Compilation of Innovative Practices of Farmers," at University headquarters, Sardar Krushinagar, on 14 August 1992. The participants included research scientists, extension workers, officials from the State Agriculture Department, development workers, NGOs, students of the University and, of course, farmers. The Campus Director, Dr. G S Judal, narrated his experiences with the ingenuity of farmers' indigenous methods of crop protection in his inaugural address.

Dr. K Janakiraman, Director of Research appealed to scientists to focus on documenting farmer innovation and collaborating with farmers to verify these practices. He had earlier sent a circular encouraging the faculty to (1) document farmers' practices while on field trips; (2) try to assess scientific underpinnings of these practices; (3) conduct collaborative experiments to verify innovative practices; and (4) organize discussions that will further examine farmers' practices as well the scientific process by which we assess them. GAU remains, perhaps, the most committed agricultural university to the cause of indigenous creativity and innovation.

Faculty from Plant Pathology, Entomology, Plant Breeding, Agronomy, Agricultural Extension and Veterinary Sciences presented papers documenting and providing scientific explanations of

farmers' innovative practices.

The response from participating farmers was stimulating though, hedging at times, on the dramatic. For example, when Farmer Shankarbhai blamed the scientific community for advising farmers to use only chemical fertilizers. "It's a sinful as offering alcohol to a 'Brahmin'," he charged. "I farmed for 20 years without facing any major problem, but ever since I changed over to commercial hybrid seeds my 'Roti' (bread) has become absolutely tasteless," he charged. In addition, he continued, your community introduced Jersey, Holstein and Frizian cattle breeds. Not only are these breeds totally useless in the fields, the heifers have difficulty conceiving!

Farmer Savabhai Patel took up where Shankarbhai left off, claiming he always followed University scientists' advice. But in spite of their advice and his efforts, he said, his yields haven't increased significantly. Initially, there was some improvement he admitted, but now he is spending Rs. 22,000 to earn Rs. 20,000. Not only has my land become 'addicted' to chemicals fertilizers," he lamented, but I have to apply more with each application. "Now is there something wrong with my land or are the chemicals to blame?" he wondered.

Farmer Ratibhai Patel, who grows cumin or 'Jeera' (*Cuminum cyminum*) on a large scale, shared experiences not unlike the other two farmers. Ratibhai asserted that

he learned more by observing neighbouring fields and communicating with other farmers, than following advice coming from any university. "I certainly am happy to see scientists at this seminar talking the language of farmers!" he said.

Gumansinh Chaudhari, Extension Officer in the Gujarat State Department of Agriculture, described some innovations in North Gujarat. Chaudhari observed Farmer punjabhai Chaudhari from village Makroda as to how he controlled white grub. In Makroda, farmers sprinkle sugar in furrows, then spread soil lightly over them. The sugar attracts ants which prey on the sluggish white grub. Chaudhari also relayed how farmers from Visnagar block broadcast lucerne (*Medicago sativa*) with mustard crop. The quick growing mustard is harvested within 100 to 110 days, then goats are allowed to graze, after which the field is irrigated to get lush lucerne crop.

Chaudhari urged India's extension personnel to forge the necessary link between farmers and scientist that will promote research based on farmers' needs. Chaudhari's concluding remark underscores an irony. Although farmers may not be happy with contributions of formal science, but it was faculty belonging to this very entity that they scorned, that gave the farmers a forum to speak out and voice their concerns. And so it seems that one cannot do without the other; that farmers need scientists and

Farmers' Practices in Animal Husbandry

P. R. Patel¹, F.S. Kavani & M.P. Pande²

Post Calving Treatment

A cow's colostrum lowers calcium content after birth, causing shivering in the animal. Farmers remedy this post-delivery weakness by feeding the cow a mixture of fenugreek seeds (*Trigonella foenum*), 'Til' (*Sesamum indicum*) seeds, 'Kalijiri' (*Veronia anthelminitica*), 'suva' (*Anethum graveolens*) seeds and black pepper (*Piper nigrum*) to increase the animal's appetite. If the placenta is not dropped within six to eight hours of calving, farmers tie a weight to the extending portion for complete expulsion.

Fodder to be avoided during Pregnancy

Farmers avoid feeding of mustard (*Brassica juncea*) fodder (straw) to pregnant cattle because they believe it has abortive properties.

Fractures

a) Fractures and bone dislocations in cattle are corrected by using bamboo splints and bandages to immobilize the affected limb.

b) Firing

Farmers use therapeutic cautery or firing (by using iron rod) on their animals suffering from chronic joint pain and acute inflammation due to muscle-skeletal diseases. Practicing farmers believe the treatment produces an inflammation which increases blood circulation, reducing the animal's pain.

1. Associate Professor and Head, Dept of veterinary Medicine

2. Associate Professor, Veterinary College, GAU, SK Nagar - 385 506 India

to soil and plants; farmers' ingenuity abounds in veterinary medicine too!



scientists need farmers. Only when there is mutual respect, can the two work as one to design and generate sustainable alternatives for an agriculture attentive to peoples' tradition and culture.

In addition to giving the farmers an unprecedented forum, participating scientist also presented papers on various aspects of farmer innovation and creativity. In addition to the papers described below, Dr. Kalyanasundaram spoke on farmer observation and practices on soil fertility management and erosion control. Plant Breeder Zaveri stressed the farmers' role, especially that of farming women, in conservation, multiplication and improvement of

plant species. Zaveri gave actual examples of the role various communities have played in improving green gram, pigeon pea, kidney bean, cluster bean, and cowpea seed stocks.

M.S. Trivedi, a Ph.D. student of Dr. B T Patel submitted his paper on various innovations collected from a tribal region of North Gujarat. K D Solanki, Associate Extension Officer, discussed ancient Indian culture and agriculture as well as advances that can be made in existing research when farmers are given their due importance, at the University farm. Dr. Momin, remained the audience, that farmers' creativity isn't exclusive

Global Communications: Pastrol innovatino from Mongolia

Bob Orskov writes from Scotland, "I saw some excellent Multinutrient blocks made by herdsmen in Mongolia. They have been making them for centuries. The ingredients are: Condensed milk, sodium carbonate, wheat bran, onion leaves etc. It is rockhard and made on the roof of their tents". *Why does it work? Orskov add, "Seleniumis an essential trace mineral probably limiting on poor soils in Mongolia. The blocks go rockhard on drying. Even too dry for fungi".* When HB asked, whether he would consider it a case of spices for livestock. He replied, "No I do not believe in spices for livestock!"

Best wishes Bob. (email: orskar@rowett.scot_agric_res_inst.ac.uk) We plan to continue this debate.

More on the Use of Milk for Virus Control

Dr M P Chari and Dr K Nagarajan¹

In the last issue (HB, 1992 Vol. 3(2):2) it was reported that farmers frequently dip their hands in milk when out-planting tobacco seedlings so as to reduce the spread of tobacco mosaic virus (TMV). References and observations furnished by the above authors supporting the efficacy of this practice are:

Chester (1934) was the first to demonstrate the inactivation of viruses by milk. Johnson (1941) showed that milk inhibits infection by TMV. Newell (1954) by spraying milk on greenhouse tomato, likewise, found reduced rates of TMV infection. Regarding the milk-dipping practice, Hare and Lucas (1959) reported that milk, by inactivating TMV, prevented contact transmission in tobacco, pepper, and tomato crops. Lucas (1962) reported that components of milk and blood serum inactivate seven plant viruses including TMV.

Phillippe and Thornberry (1963) showed that casein and certain milk globulins were powerful TMV inhibitors.

Greenhouse tests conducted at CTRI showed that a 1:100 dilution of milk with water inhibited TMV (in tobacco) by upto 90%. In field trials wherein the same dilution was sprayed at 21 and 30 day intervals after planting inhibition was again evident.

Dr. Chari and 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.

(We strongly recommend readers to write about similar ideas of farmer's innovation on which systematic research has been undertaken by the scientist: Ed.).

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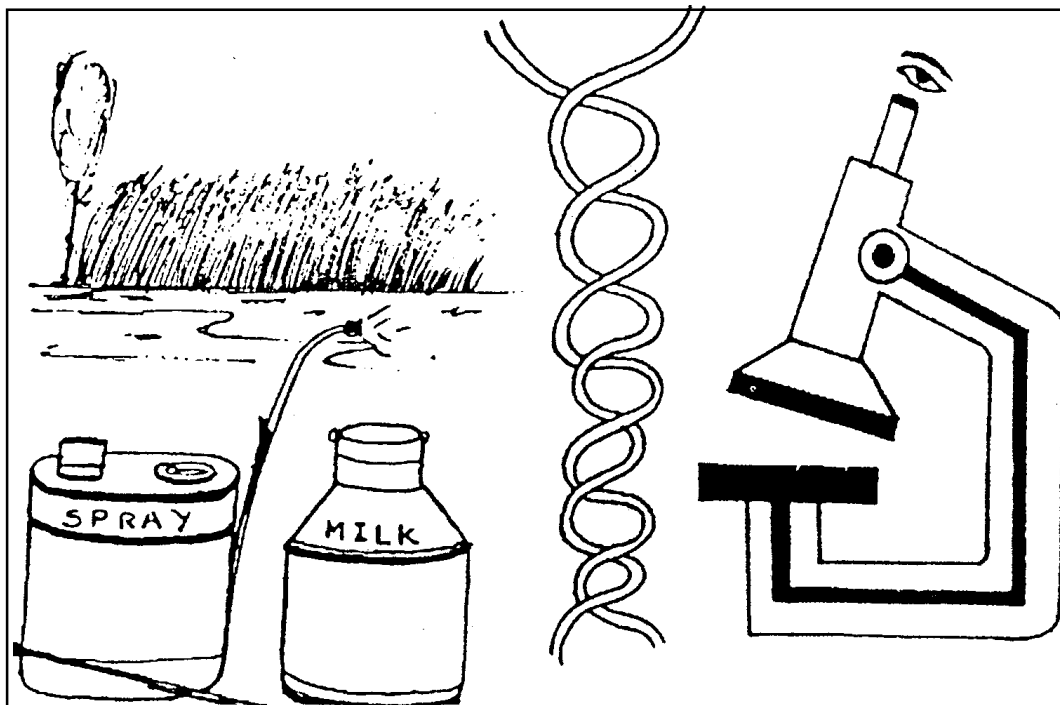
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Attracting Birds for the Control of Crop Pests

Dr. M A Qayum¹ describes a novel, method of controlling of castor semilooper, using an indigenous approach without relying on chemical pesticides.

Castor growers of Andhra Pradesh use chemical insecticides, such as BHC and Follidol dust to control the castor semilooper pests. These insects raise three to four broods during the castor plant's life. The immediate knock-down effect of BIIC does kill the pest, but it also kills natural parasites and predators of the pest. The consequent resurgence of pests therefore is uncontrolled and causes irreparable damage.

Some farmers, however, use an age-old practice to control semilooper larvae. Rice cooked with turmeric powder is used to attract birds. Approximately 1.0 kg rice is needed for every acre to be treated. Excess water is avoided

while cooking. Small lumps of the yellow-coloured rice are then placed in the field, about 5 metres (8 to 10 steps) apart, in the early morning or late afternoon. This practice is initiated when significant numbers of larvae begin to appear. It is repeated continuously for 2 or 3 days. The first day usually passes as a baiting day, but from the second day large numbers of birds, attracted by the rice, begin to prey upon the larvae. If a high incidence of pests persists, the practice is continued until it is brought under control.

Farmers in the village of Solipet, Nalgond District, Andhra Pradesh protected their castor field this year (Kharif 1992) using this

method. It was observed that infestation by the second brood of larvae was negligible in the yellow rice-treated fields as compared to pesticide-treated ones.

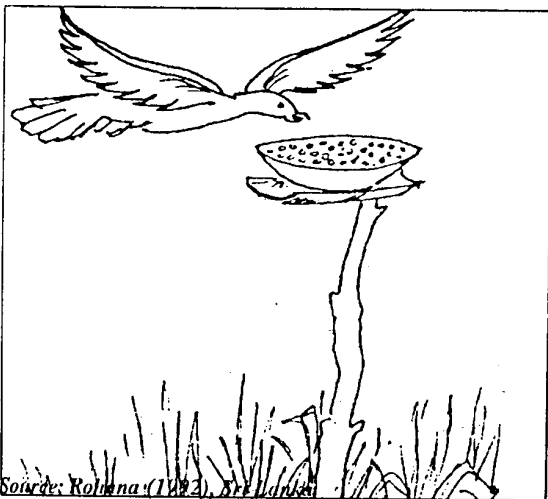
Rohana (1992)² and G K Upawasa (1990)³ have reported a similar practice in Sri Lanka. During a festival known as 'Kem', people offer a mixture of roasted pulse, flowers and other grains to a local goddess during the night.

The food is lit up by a lamp. The light attracts the pest insects that are then consumed in large numbers by birds that take advantage of the baiting.

In other cases, the food is



Source: Rohana (1992), Sri Lanka



Source: Rohana (1992), Sri Lanka

offered on a thin disk (made from the cross-section of a plantain stem) balanced delicately on a stake. When the birds attempt to take the food, the disk tilts and the food falls to the ground. When birds go for the fallen food, they find and eat the caterpillars too.

Rohana (1992) also noted that some farmers broadcast rice cooked in milk to attract the birds. This method could perhaps be also used against caterpillars that attack vegetable crop (some experimentation seems warranted).

¹ Hon, Director, RHC Project, Action for World Solidarity, Secunderabad-500017, Andhra Pradesh, India.

² Rohana U; *Indigenous Pest Control Methods in Sri Lanka, Presented in International Symposium on Indigenous Knowledge and Sustainable Development at International Institute for Rural Reconstruction, Silang, Cavite, Philippines, Sept, 21-25, 1992.*

³ Upawasa, G.K. *Lessons from Traditional Sri Lankan Agriculture, in Biological methods of Pest Control Sri Lanka, Proceedings: 39-48, 1990.*

Indigenous Potato Processing in Gujarat State, India

V S Khatana, M D Upadhya¹ and H N Verma²

In terms of tonnage, potato ranks fourth among the main food crops of the world and is rich in proteins and other nutrients. India produces 14.5 million tons annually on an area of 0.918 million hectares and the government wishes to double production by the year 2000. One constraint hampering this goal come from losses incurred in the post-harvesting stage due to cuts, bruises, shrinkage and subsequent rotting (Maini, 1986).

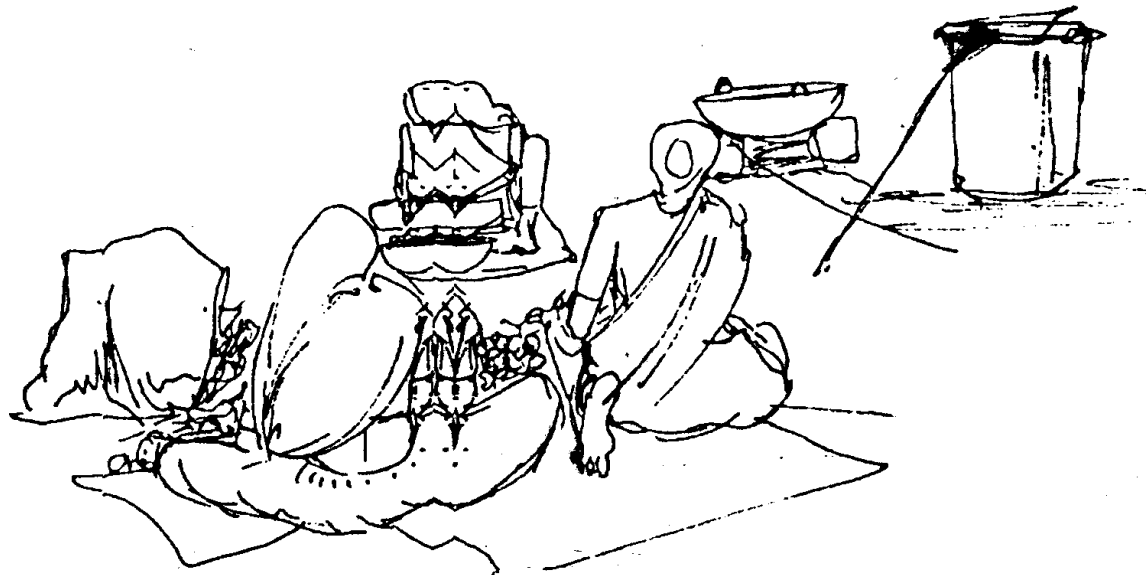
Horton (1988) reported losses as high as 40% in developing countries and in India, post-harvest losses are estimated to

be 17 per cent of total production. This loss translates into an average

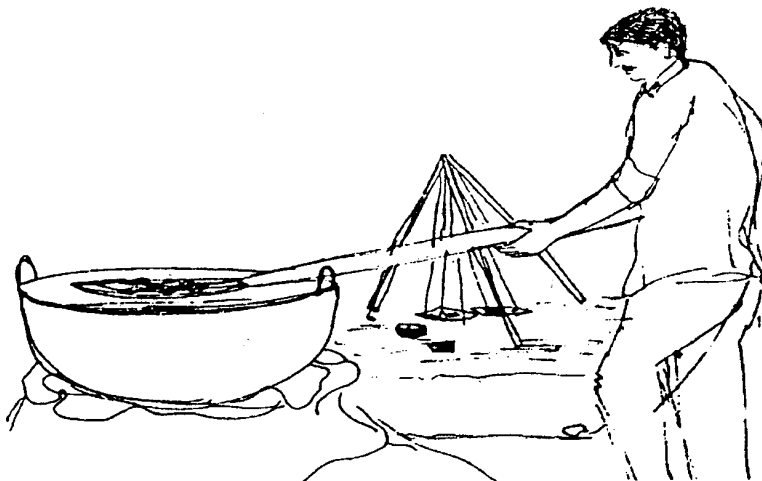
of 3 kg of potatoes or an average of 2300 k cal per person.

Serious research efforts for farmers, who seldom wait for researchers, have developed a number of post-harvest technologies and practices to recoup damaged

potatoes. A study was carried out in the Banaskantha and Kheda



Districts, the potato producing areas, of Gujarat State, India. In these districts a particular processing them for resale. Information was collected from this community, potato farmers and consumers, of Deesa and Rajpur during 1990-91.



About a century ago potatoes were introduced to farmers in the town of Deesa. Potato processing started in this area about 50 years ago. From each hectare harvested, about 2.2 tons (approx. 6% of total yield) were considered second grade due to being damaged, immature or misshapen. A group of labourers initiated their own potato processing activities to take advantage of second grade potatoes, which were usually discarded.

¹ Dr. Khanna and Dr. Upadhya are working as Socio Economist and Regional Director at International Potato center, Region Vi, IARI Campus, New Delhi-110012 respectively

² Dr. Verma is an Assistant Research Scientist, at Sorghum Research Station, Gujarat Agricultural University, Deesa, Gujarat.

Processing equipment and materials

These are simple, inexpensive and can be made by local artisans. For example, the iron vessel used for boiling the chips is the same as that used by village sweet maker. It is large and can hold up to 140 kg of potatoes. The vessel which costs almost Rs. 1000 can last more than 10 years. The perforated ladle used to remove the boiled potatoes out of the boiling water costs about Rs. 50 and it also has a lifespan of more than 10 years. The chip maker which is made of used iron sheets of various thickness costs about Rs. 70. The one used for making grille-like chips ('Jali') costs Rs. 75 and the shredder used for strip-like chips ('Kevada') costs Rs. 50. The blades of both kinds of chip makers have to be replaced every year. The baskets used normally for collecting harvested potatoes are brought second hand from farmers and used during the processing stages. A single basket, including repair charges if any, costs Rs. 15. Each basket holds between 20 and 25 kg potatoes and wages are paid on the basis of number of baskets peeled and chipped. As for the knives for peeling any kind can be used and the cost varies from Rs. 2 to Rs. 5. The fuel used is wood: 15 kg of wood is needed to boil 100 kg of potatoes. Wood costs Rs. 100 per quintal.

Alum and table salt are used in the bleaching, and water of course is available free of charge; only it has to be collected in the early hours from public taps.

Steps in Processing potato chips

The potatoes are sorted before processing to facilitate uniformity of boiling different batches. Different grades are used differently; large sized ones are used for making 'Jalis', medium sized ones for wafers and the smallest ones are shredded. Good ones that are retrieved are sold directly as table potatoes. Washing is optional and is done only if the tubers are covered with or lot of soil or the batch has too many rotten ones. Boiling is a process that can be done before or after peeling; now a days it is done more commonly after peeling. However, when done before peeling, it makes the peeling easier. It takes about four hours from 4 am to 8am, for boiling and blanching. Alum is used for blanching. When the peeling is done after boiling, the peels also fetch money - the peels of 100 kg of potato fetches about Rs. 5. The peel - a thick layer is removed and is fed to cattle. The chipping is completed by noon and the end products spread out to dry in the sun on the ground or in tin roofs. The latter is not liked because tin heats up rapidly and this is said to discolour the chips. At the end of the day the chips are swept into heaps and stored in a corner in the house to be wrapped up in plastic bags for sale. In humid conditions, the chips are stored in airtight tins.

When the boiling is done after chipping the sliced chips are soaked in saltwater prior to boiling. Alum (10g) and more salt (20g) are added to the water used for boiling. In this method however, a lot of starch is lost and so the rate of recovery is reduced.

Chips made by this method have a restricted sale because they cannot be consumed on days of ritual fasting for salt intake is prohibited during such fasting whereas unsalted potatoes are permitted.

After the farmers complete their harvest, the fields are ploughed and remaining tubers are gathered. About 0.25 tons of these potatoes, locally called 'Khet aloo', are recovered and sold at half the price of good tubers.

The processing of the 'Khet aloo' is carried out in the household or in the town's outskirts. The equipment is simple and made by local artisans (see Box or details). This group of processors comprises the poorer families, generally landless labourers. Historically, when the processing of 'Khet aloo' began, both male and female labourers worked, but now it is a female dominated industry - almost all the activities are carried out by mothers, teenage girls and children.

Upto 200 kg of potatoes can be processed daily with an initial fixed cost of Rs. 1000. The variable cost is much higher; approx. Rs. 2000 is required weekly for labour and material. With this in mind, the Nagrik Bank loans upto Rs. 5000 to each processor for the past few years.

Small-scale processors assist local farmers, making potato production more profitable. Again, in a vein similar to small-scale farming, this micro-industry is being threatened due to modern mechanization. But these processors, like their farming counterparts, aim to minimize risk and do this through simple modifications in their operations. Neither group can afford to make drastic changes. And small changes by small scale producers can make big difference to productivity.

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Innovations from Other Parts of South Asia :Perspectives from Sri Lanka

Dr. E S Mahendrarajah

1. In Jafana some farmers specialize in goat rearing. They use feed especially selected for rapid fattening, and only fatten a few animals at a time. They also construct pits, 10x10x6 feet deep, so as to facilitate the force feeding and in turn to shorten the fattening period (some what similar to Chinese method of force feeding of ducks). This age-old method of raising livestock is conceptually similar to the currently fashionable cattle and pig containment systems in the USA and Europe.

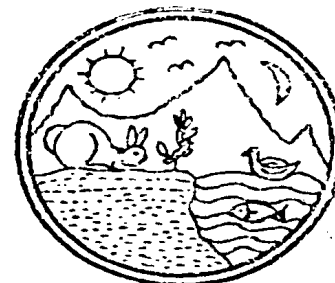
2. When tomato and brinjal plants fail to flower and fruit, farmers dig a small trench around the area to destroy weeds, and then allow the

plants to wilt for a day. Then when they irrigate, the plants start to flower.

3. Banana (*Musa paradisiaca*) plants are allowed to wilt in the shade for nearly a month before out-planting. (*Does this improves post planting growth? Ed.*)

4. Lime (*Citrus aceda*) is never put with okra, because it cause the vegetable to become hard and woody.

5. After giving birth, women are given deer meat that has been preserved in honey and stored in tree trunks (*We, the staff of The Honey Bee do not know the reasons behind this practice. If you do, please let us know: Ed*)



Dr E S Mahendrarajah is a practicing dental doctor but has achieved excellence entirely through self taught methods in making small holder livestock based farming systems. His philosophy is captured very aptly in a line of his poem,"

The seas, The trees,
The mountains speak,
With Those Who yearn
And learn and Seek"

He is very taken to share his work and ideas with all those interested in developing technologies through local materials and methods. He can be contacted at: **Gnanammah Integrated Research Farm (Kandenuwara), King's Street, Matale, Sri Lanka (Ph: 066-2783).**

Farmers' Innovations in Eastern Uttar Pradesh

Rakesh Singh¹

1. Transplantation of Paddy vis-a-vis sowing sprouted seeds

Given the constraints in labour supply at the time of paddy transplantation, many farmers soak the paddy seeds for about 24 hours in water. Then the seeds are taken out of water and covered with cloth until they sprout. Such sprouted seeds are sown directly.

2. Controlling Weed *Cyprus rotundus* ('Motha')

Farmers spread dry pigeon pea stalks in the field affected by the weed called 'Motha' (*Cyprus rotundus*) before it rains. When the rain drop trickle through the stalks on the ground, the extract or

washing from the stalks are supposed to suppress the weed. It seems that this method is preferred over the manual weeding.

3. Climate Change and Agronomic Adaptation

Farmers have noticed changes in micro-climate that cause stress in conventional cropping systems. Pigeon-pea when sown at the conventional time or slightly later was affected adversely by heavy rains. Now farmers have started sowing it early with the help of some irrigation so that crop is well established before the rains come. (*Same practice is followed for high yielding variety of cotton in Gujarat: Ed.*)

4. Livestock

a) Digestion/Flatulence problem

Livestock suffering from digestive disorders caused by eating rotten fodder or some other factors, are fed purcc larified butter oil (ghee). It acts as a laxative and curves flatulence or other stomach disorders.

b) Foot and Mouth Disease

The hoof and the mouth of the affected animals are washed with 'alum' solution. The animals are made to walk in mud twice a day which helps to control the infection or even eliminate it.

¹C/o R D Singh, C S II Paecel Office, North East Railway, Mau Junction, UP 275101, India

Beliefs and Folklores documented in old Indian Literature

Mr M Selvanayagam has completed his thesis on "Traditional beliefs associated with agriculture", under the guidance of Dr. R Netaji Seetharaman at Department of Agricultural Extension and Rural Sociology, Tamil Nadu Agricultural University, Coimbatore. Several beliefs and folklores on climatology, soil fertility, weed, crop, livestock, birds, music and festival from this thesis are presented here. In spite of our best effort we did not get original literature, hence, we could not cite original reference. Interested readers please do write to either Mr. Selva\ayagam, Agriculture Officer, at Indiana Bank, Jamnamarathur, Javvadu Hills, North West Dt. Tamil Nadu 635703 or his major adviser Dr. R. Netaji Seetharaman at Tamil Nadu Agricultural University, Coimbatore.

Climatology

1. If a snail climbs certain trees, there will be no rain
Source : Tirunelveli District farmers (Tamil Nadu) Chettiyar (1973)
2. If crows and fowl spread their wings and jump about, torrential rains will follow.
Source: Kanyakumari District farmers (Tamil Nadu) Chettiyar (1973)

3. If a hoisted flag flies to the South, rains will be scarce. If it flies to the North, rains are assured

Source : Kanyakumari, Chettiyar (1973)

Soil/Land

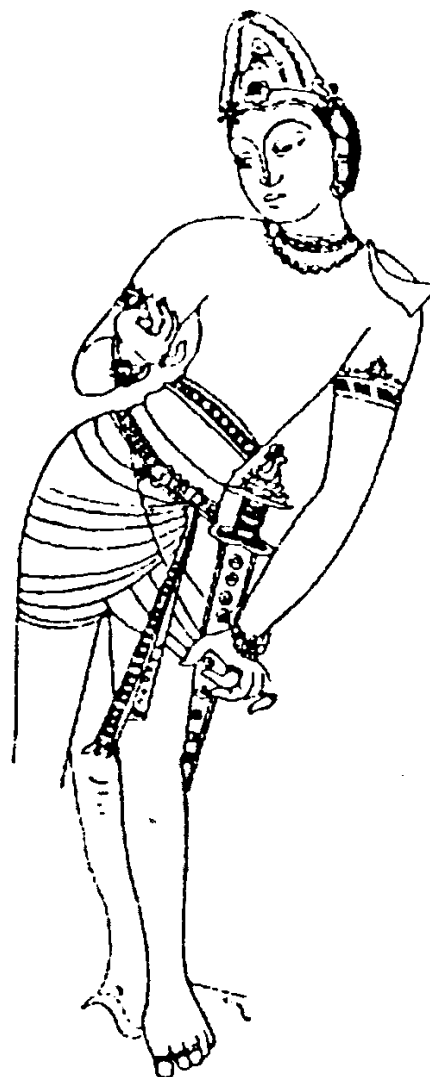
4. Application of neem of cake will correct soil salinity
Source : Tamil Nadu farmers, Kandasamy (1978)
5. The weed 'Korai' will ruin farmer's prosperity
Source : Kandasamy (1978)
6. A field with the weed 'Argu' is useless
Source : Kandasamy (1978)

Bird

7. If 2 cobs sprout out of an ear of corn, it is a favourable sign, but if a bird builds its nest on the ears, they are not cut until it has left the nest (Source : Himachal Pradesh farmers, Randhawa and Nath (1959).

Crop

8. No other crop is as susceptible to diseases as gingelly.
Source : Tamil Nadu farmers, Kandasamy (1978)



Festival and Music

9. When farmers are ploughing the field, they play an instrument called the 'Kambela' and sing "Thenai Pattu" to ensure a good 'Thenai' crop.

(Source : Irulas of Coimbatore (Tamil Nadu), Subramaniam (1979)

(It could just to invigorate the effort: sayings are not always to be used in their literal sense. They are metaphorical and allude to a subtle meaning : Ed.)

STRANGE BU TRUE

Biogas from Tea-leaf wastes:

Two gas plant owners, late Shri Ram Singh and Shri Bhairoo Lat Kothari of Bap village in Jodhpur district, Rajasthan, had been using cattle dung in their biogas plants. But the continuous drought in the region depleted the cattle stock and, therefore their source of dung. Out of desperation they tried tea-leaf waste; it was available in large amounts (As one of them owned a tea stall). The results so stunningly successful that now they use tea-leaf waste only. These entrepreneurs also tried vegetable waste, but the gas output was less. One kg. of tea wastes produce 12 cubic feet of gas which is equivalent to approximately 10 kgs. of cow dung.

Source: Science for village, Nos. 153, May 1992

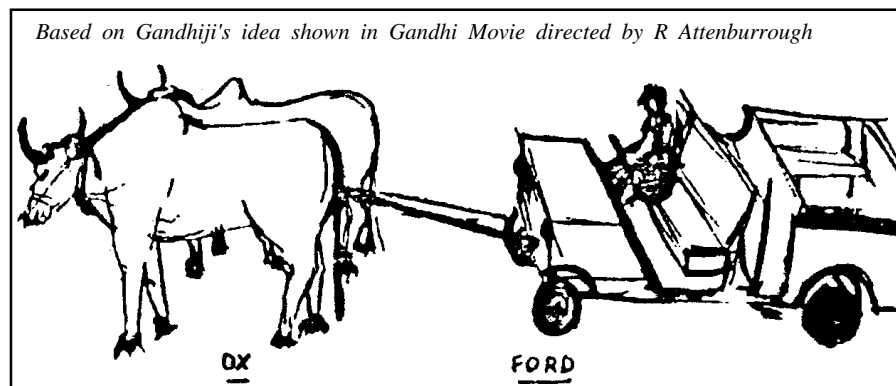
Honey Bee Hums : Contributions from Local Versions

A farmers' practices from "Madhuchakra"¹ Vol. 2(1) January, 1992

1. Tribal farmers store red gram safe from pests for a year or more after adding laterite soil. After 3-4 days of sun drying they add a paste of laterite soil and water to gram and allow the mixture to dry. Before using the grain, they rub a gunny/burlap bag vigorously on the heap of seed, winnow and then mill.

Iswar Pradhan Village Gatamaha, Sarangarh, Phulbani, Comm: S. Rath.

2. In Mayurbhanj, farmers have been growing lime for more than thirty years. During harvest time truck loads of 'Kagzi' limes are sent to nearby cities. The farmers harvest the 'Kagzi' lime and expose them to the open air overnight. The next day they put the limes, layer by layer alternating with saw dust, into a sand pit. They water them and cover the pit with sand. They maintain regular watering of the pit,



and by this process keep the limes for 15-20 days without loss of quality, Comm: VAW (Village Agri. Extension Worker?), Betanati.

3. The farmers of Suranagiri and Kothagarh regions propagate arrowroot while harvesting cultivated roots. They collect the arrow root tubers, from wild in the forests of their region, and then replant the top portion. This ensures replacement of the crop year after year.

4. Shri Dharamali Malik, village Premjhari, Khajuripada block, Phulbani

District, has been intercropping pumpkin with summer maize with the result that pumpkin fruit drop is drastically reduced. Pumpkin plants are sown with 2 m spacing along the row, and are alternated with double rows of maize.

5. The farmers of Pipili block of Puri District practice an interesting disease control for bacterial leaf blight in paddy.

They make a slurry of 20 kg cow dung with 200 liters of water and strain it through a gunny bag. They further dilute the filtrate with 50 liters of water and allow it to stand. The filtrate water is then decanted, strained, and sprayed on healthy plants to check the spread of the disease. They are also regulating the use of pesticide by allowing the first man and the last man to take up transplanting of paddy in a cluster. They use Furaden a chemical pesticide, only in those two fields. Others are not using any pesticide (please see box too)

Cow-dung for the Control of Bacterial Leaf-blight

Bacterial leaf-blight of rice caused by *Xanthomonas campestris* pv. *oryzae* is dreaded disease that occurs in many parts of India, especially under lowland, waterlogged conditions. S. Gangopadhyay and K M Das (in Indian Farming, April, 1989) have conducted an experiment to test the effectiveness of cow-dung slurry (2 kg in 10l water) in the control of this disease. The untreated crop experienced 87% disease incidence. Several commonly used anti-bacterial agents that were tested reduced the disease incidence to values in the range of 20-37%, and stale cow dung fell in this range as well. Strikingly different were the fresh cow dung results wherein the disease incidence of only 4.5%. In terms of net income per hectare from the crop, fresh cow dung resulted in Rs. 8,955, stale cow dung Rs. 6,075, control treatment Rs. 780, and anti-bacterial agents in the range Rs. 1,095 to Rs. 3,590.

1. An Oriya version of Honey Bee, edited by Dr. Sabyasachi Rath, National Institute for Sustainable Tropical Agriculture and Human Action (NISTHA), M-5/8 Acharya Vihar, Bhubaneswar-751013, Orissa, India

Survey of Farmers' Innovations in Gujarat : Part IV

Anil K Gupta and Kirit K Patel¹

Introduction

The data base on indigenous innovations developed by farmers, artisans, pastoralists, etc. is growing rapidly. The creative contributions by the grassroots innovators in Gujarat constitute the largest regional component of this data base. We are trying to make this data base available to co-researchers and grassroots activists around the world in printed as well as floppy form. We would appreciate if the readers will collaborate in such surveys in different parts of the world and contribute the insights learned in the process. Please make sure that you provide the name and address of the innovating individuals or community. We should also undertake whatever measures necessary to ensure that the intellectual property right of these innovators are not infringed. We have been asked this question as to how will sharing this information prevent the unscrupulous interests from violating the farmers' rights? Our contention is two fold:

1. We want to create pressure (in a moral and ethical sense) that generates positive outcomes so that anybody using farmers' knowledge will feel responsible for sharing the returns with the innovators in kind, cash or honour.
2. We are also trying to create controls within an international registration system so that innovations cataloged in this data base are not available without explicit permission of the trust registering these innovations.

As mentioned in the editorial, a trust called SRISTI (Society for Research and Initiatives for Sustainable Technologies and Institution) is being set up to expedite the formation of a global society and to safeguard the interests of grassroots innovators. We appeal to the readers to write in about the way they want to collaborate in this society. We will restrict the membership to only those scientists, professionals, activists or farmers who have demonstrated concrete evidence about having studied, researched or supported creativity at grassroots level.

The issue includes practices out of which deals with soil, crop, water, climate etc. and rest with livestock and poultry. We also hope that readers will write if some practices mentioned here are also found in their areas of work. This will help in identifying cross-cultural dimensions of the innovations. While reacting to these ideas, please refer to the serial number of the practice.

¹Professor, Centre for Management in Agriculture and Associate Editor, Honey Bee respectively, at Indian Institute of Management, Ahmedabad-380015, India

Agricultural Practices

3301 Soil Fertility Management

a) Green Manuring of Cassia tora

'Kuvad' (Cassia tora), a common and easily-grown plant, has application as a green manure crop. Farmers broadcast the seed on the field at the beginning of the monsoon season and a month later incorporate the 'Kuvad' into the soil.

Parmar Rajesh B, Vill: Sonasan, Tal: Prantij, Dist: Sabarkantha, Comm: Parmar Tarulata R.

b) Weed as a Green Manure

'Fatlo' is a vigorously growing weed for some people while to others it is a useful green manure. Before the monsoon season, farmers collect the 'Fatlo' seed and broadcast it on fallow land. It reaches a height of 4-5 feet within 2 months and is then incorporated into the soil.

Gamit Ramubhai Khetiyabhai, Vill: Gandhinagar, Tal: Uchhal, Dist: Surat, Comm: Vasava Suresh K

3302 Soil Reclamation

Empty castor pods are incorporated into saline soils as part of reclamation. A noticeable improvement results within one or two years. Bharadiya Arjunbhai Popatbhai, Vill: Bhadla, Tal: Botad, Dist: Bhavnagar, Comm: Makvana Raymal J.

3303 Enhancement of Fruit Set in Papaya

To induce trees that flower but fail to fruit, farmers insert nails into the stem at a height of about one foot. Nails of various materials, such as iron or wooden (1-2 cm diameter) or even clay tile (used for making roof) shafts, called

'Nalia' are meant to remain in the stem indefinitely. (According to reports we have received, this practice is widely used. However, failure to bear by inserting nails has also been reported: Ed.)

Maganbhai Popatbhai Sheldiya, Vill: Sandhiyala (Mota), Tal: Khambha, Dist: Amreli, Comm: Dabhi Premaji G.

3304 Improving the Quality of Banana

Occasionally, fruits of banana crack and fail to fill out. As a prevention, farmers in Saurashtra add castor oil to the irrigation water. A tin is suspended over the water channel so that the oil drops goes into the running water drop by drop. Some farmers also believe that this helps to control of soil pests such as white ant, locally called 'Talkidi'. In Mahuva block in the last two years about 50 per cent farmers are using this method.

Chitharbhai Kheda, Vill: Koyda, Tal: Mahuva, Dist: Bhavnagar, Comm: Dhandhalaya Bhargav K.

3305 Micro-Climatology and Risk Adjustment

People watch the behaviour of animal, insect, plant and other component of nature very minutely and predict the mood of the nature of minimize the risk. Based on this observation of people few methods of predicting the nature is given here (Please see HB3(i):5 and IIB4(1):for more information)

a) Forecasting Rain

i) Ants

Ants coming out from their nest carrying their pupae, indicates that rain will come soon. (This is very widespread belief: Ed)

Chaudhari Kanvarjibhai Chhaganbhai, Vill: Kavchiya, Tal: Valiya, Dist: Bharuch, Comm: Chaudhari Vanjibhai L.

ii) Goats

Goats can sense approaching rain, and through behavioural changes signal the coming 2-3 days in advance. They change their usual resting places, show little interest in taking food or water, and bawl and shout the day long.

Manubhai Keshubhai Akbari, Vill: Bhad, Tal: Khambha, Dist: Amreli, Comm: Dabhi Premaji G

iii) Neem (*Azadirachta indica*)

If ther 'Neem' (*Azadirachta indica*) tree bears plenty of fruit and the 'Baval' (*Acacia nilotica*) tree produces plenty of pods, then the total rainfall for the monsoon will be high. (This belief was documented in 1985 during our field work in Western Haryana see Gupta, Patel and Shah, 1987; Gupta 1980).



Manubhai Keshubhai Akbari, Vill: Bhad (Vakiya) Tal: Khambha, Dist: Amreli, Comm: Dabhi Premji G.

b) Forecasting of Frost

Farmers in this area grow native varieties of cotton called 'Kalyan' and 'Ghumad' over large areas in Viramgam and Surendranagar districts. In the winter, a delayed crop of cotton can suffer heavy losses due to frost. If there is a rain on seventh day of next fortnight of the month 'Shravan', there is a high chance of frost that winter and if rain comes on eighth day of next fortnight of month 'Shravan' (the day called 'Janmashtami') the chance of frost that winter will be low. Using this method, farmers decide whether or not to go for late sowing. Dahyabhai Mehabhai Sidhav, Vill: Nagra, Tal: Patdi, Dist: Surendranagar, Comm: Mori Vasubhai N.

3306 Botanical Insecticides

a) *Calotropis gigantea*

i) Aphid Infestation

Farmers place freshly-cut branches of 'Akada' (*Calotropis gigantea*) in irrigation channels to control aphid infestation in lucerne (*Medicago sativa*) 'Akada', white and violet flowers, is commonly found in uncultivated lands and it's latex irritates the skin.

Ahir Lavnanbhai Alabhai, Vill: Alindra, Tal: Mendarada, Dist: Junagadh, Comm: Rojara Mansukh V.



ii) Termites Infestation

'Akada' (*Calotropis gigantea*) plant material, 8-10 kg, is soaked in water for at least 24 hours then filtered. This liquid is poured on termite-in-fested soil. Farmers evaluate the effectiveness by placing pieces of wood at various points in the field. If the wood remains pest-free for one week then the treatment is judged effective. It is used by 25-35% of the farmers in the area (*Information on how much treatment, how long it should be sustained, and when to begin and end, is embedded in this indigenous science. Your comments are invited : Ed*)

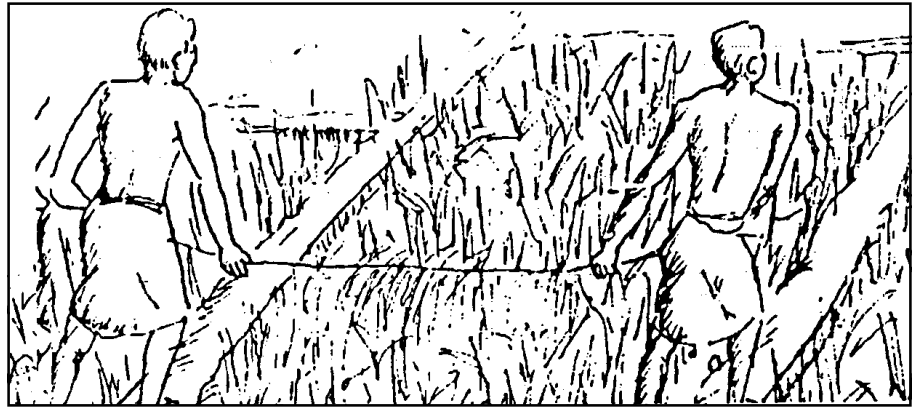
Parmar Ganpatsinh Balusinh, Vill: Choryana Muvada, PO Sandasal, Tal: Savli, Dist: Baroda Comm: Pravin D Parmar.

iii) Caterpillars in Cotton

Caterpillar infestation can severely damage a cotton crop. Reportedly the latex of 'Akda' (*Calotropis gigantea*), when diluted with 15 parts water and sprayed on the crop, effectively controls the pest within three days. The new growth after treatment is also free from infestation. (The farmer stresses, "Try the technique and see for yourself" and suggests that a column in Honey Bee should be started for 'farmer proven' technologies as distinct from those with which farmers are experimenting. Any comment? Ed.) Bhanjibhai Jani, Vill: Khagiyali, Tal : Sihor, Dist: Bhavnagar, Comm: Dhandhalya Bhargav K.

b) *Sapindus Emarginatus*

To control nursery bed pests - white grubs, termites, and others - soak 0.5-1 kg of 'Arithas' (*Sapindus emarginatus*), in one liter of water overnight. Crush the softened nuts, filter the pulp



through cotton cloth stainer, then pour the filtrate on the soil.

Hirabhai Kanjibhai Salwara,
Vill: Gunjpur, Tal: Muli, Dist:
Surendranagar, Comm: Rojara
Mansukh V.

c) Seed Treatment of *Aristolochia bracteolata*

Cereals seeds, such as wheat, are treated with 'Kidamari' (*Aristolochia bracteolata*) left extract so as to effectively control termite and white grub. Jayantibhai Mer, Vill: Lathidal, Tal: Botad, Dist: Bhavnagar, Comm: Makvana Raymal J.

Farmers control leaf-eating insect pests by building bunds that



Sapindus emarginatus

capture water and cause the field to flood. When flooded, two people, by walking along opposing edges of the field, draw a rope that knocks the insects off the plants and into the water where they drown. (This practice is widely used in Bangladesh, Sri Lanka, and ancient China: Ed) Gamit Dilipbhai Jethiyabhai, Vill: Mirkot, Tal: Uchhal, Dist: Surat, Comm: Vasava Suresh K.

A Continuing Experiment

In the village of Raliya, Bhavnagar district, the farmer conducted an experiment to reduce premature dropping of coconut. He mixed approx. 250 gm of 'Ijmeth's phool' in one liter of water and sprinkled the mixture around the root zone of his tree. No positive result. Next he tried digging down to the rootlets of the tree and placing them inside a plastic container that had been perforated small holes. The holes allowed the 'Ijmeth phool' solution to drip through very slowly. This time there was slight increase in yield, but he is still searching for a more feasible and practical solution.

Patel Raghubhai Karsanbhai, Vill: Raliya, Tal: Tansa, Dist: Bhavnagar, Comm: Dhandhalya Bhargav K.

Animal Husbandry

3308 Urinary problems (in Bullocks)

The problem of urinary blockage is said to be more common in bullocks than in other animals. There are many methods of treating this condition:

a) Bark of *Syzgium cumini*

Approximately 1 kg of bark of the 'Jamun' (*Syzgium cumini*) tree is soaked in water until it becomes soft. Then it is crushed and soaked again. A filtrate of this is fed to the suffering animal. If bark of 'Jamun' is not available, 50 g of drumstick seed (*Moringa pterygosperma*) with one liter water is used.

(TCL 1 : Farmers' observation that urinary blockage is common in bullock is correct because the urinary passage is narrow, curved 's' shaped, long and not distensible. While in females, it is wide, straight, short and distensible, so small stone even pass through easily. The action of the bark of *Syzgium cumini* is not known. But the seeds of *Moringa pterygosperma* are diuretics and antispasmodic, may help in removal of stone).

*Rangpara Ranchhodhbhai
Chhanabhai, Vill: Khitla, Tal: Muli,
Dist: Surendranagar, Comm: Rojara
Mansukh V.*

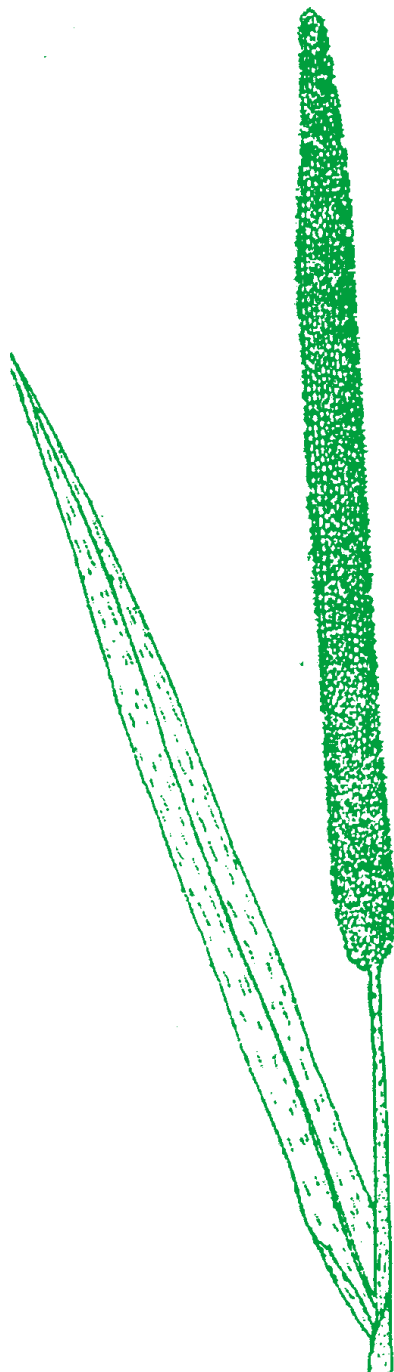
b) Pearl Millet Pollen

The seed-setting stage of pearl millet is known locally as 'Dudhiyo', which means milk-stage. The pollen of this plant is collected by gently running the fingers on the flowerheads. This is mixed with water and given to the bullock for releasing the urinary blockage (TCL

: The Effect of pollen of pearl millet is a hypothesis)

*(Can we expect some
experimental validation? : Ed)*

*Nadoda Kanubhai, Vill:
Malanpur, Tal: Patadi Dist: Surendra-
nagar Comm: Charkata Babu G.*



c) Filtrate of *Hordeum vulgare*

A filtrate of barley grain (*Hordeum vulgare*) boiled in water reportedly dislocates stones in the urinary channel.

(TCL: Barley grains are used to make an emulsion for the infection of urinary and tract and diuretics. But its effect in removing stones is also hypothesis).

*Pravinsinh Pratapsinh, Vill.
Badana Muvada, PO: Mevali, Tal:
Savli, Dist: Vadodara, Comm: Pravin
D. Parmar.*

d) Fruits of 'Bijoru'

Urinary blockage is also treated by feeding the bullock 10-15 'Bijoru' fruits, with horizontal cuts made on them, per day. Relief can be seen on the following day but the animal should continue this course for 8-10 days to complete the cure.

The 'Bijoru' tree can be found throughout India, but it bears fruit, which resemble citrus on the inside, only towards the end of June. The treatment has been practiced, in this region but only by a few farmers, for the past 15-18 years.

*Bhil Ranubhai Bhikhabhai, Vill:
Nicha Kotda, Tal: Mahuva, Dist:
Bhavnagar, Comm: Makvana Bharat J.*

(TCL : The Urinary blockage by stones is a serious problem and requires immediate treatment by the clinician, delay in treatment may lead to serious consequences, hence none of the above methods are useful).

*(We recognize scientific impatience,
but urge analyzing indigenous
practices before rejecting them as
unworthy or useless: Ed.)*

Baraiya Sathabhai Rajabhai, Vill: Gorkhi, Tal: Talaja, Dist: Bhavnagar Comm: Makvana Bharat J.

3309 Unsuccessful Conception

Castor oil, 200-300 ml, is given to cows that are unable to conceive. Sometimes banana leaf extract or the actual leaves are fed to the cattle as treatment. This is practiced only once or twice after taking an animal in heat to a male for service.

In north Gujarat castor oil is also used in this application with camels. In this case 1 - 1.5 kg is given to the female camel.

Rabari Bholabhai Virabhai, Vill: Igorala, Tal: Khambha, Dist: Amreli, Comm: Dabhi Premaji G and Desai Talajabhai Khengarbhai, Vill: Narsinhapura, Tal: Kadi, Dist: Mahesana, Comm: Oparmar Daxa R.

3010 Post-Calving Care

Jaggery 1-2 kg is dissolved in digestive track. The problem, locally called as 'Karamiya', causes abdominal pain and blockage of the animal's colon.

a) Mustard Oil

Mustard oil (100-150 gm) given daily for one week, reportedly controls intestinal parasites in cattle. The oil is administered with a 'Nal', a tube-like apparatus used for giving liquid medicine to animals. Following this treatment, parasites are expelled and the feces are immediately removed from the cattle-shed. (TCL : Mustard oil has only laxative action, so not much beneficial for the treatment of worms. But strictly removal of dung containing parasites is very good which helps in checking of further spread to the healthier one)

Shankarbhai Thakor (Panjrapol Wala) Vill: Mansa, Tal: Vijapur, Dist: Mahesana, Comm: Maheria Vasanthi D.b) Castor Oil

Castor oil, 50-70 ml, is fed to the animal successively for three to four days. After this treatment the feces become loose and parasites are expelled. Chauhan Abhesinh Deepsingh, Vill: Vejpur, Tal: Savli, Dist: Baroda, Comm: Chauhan Vijaysinh A.

3012 Yoke Gall in Bullocks

This problem is very common for newly yoked bullock, but sometimes happens to older animals under a new yoke. This causes the animal pain, but can be remedied in two different manners.

a) Root Extract of *Triumfetta rotundifolia*

Root extract of 'Jipta' (*Triumfetta rotundifolia*) is applied on the neck twice in a day for three to four days successively. 'Jipta' can be found growing in hedgerows all year long.

Popatbhai Vaghjibhai, Vill: Anida, Tal: Khambha, Dist: Amreli, Comm: Dabhi Premaji G.

b) Mixture of Current of Dry-cell Battery and *Byttneria herbacea*

A mixture of black powder from dry-cell battery and oil (type of oil is not furnished : Ed.) is applied to galls on the neck that are caused by the yoke. In other cases, 'Buharo' (*Byttneria herbacea*) leaves are chewed into a paste by the farmer and then applied. The treatment is repeated twice per day for two to three days or until the gall is healed. Roughly 20-25% of those who keep bullocks in Vijapur block use

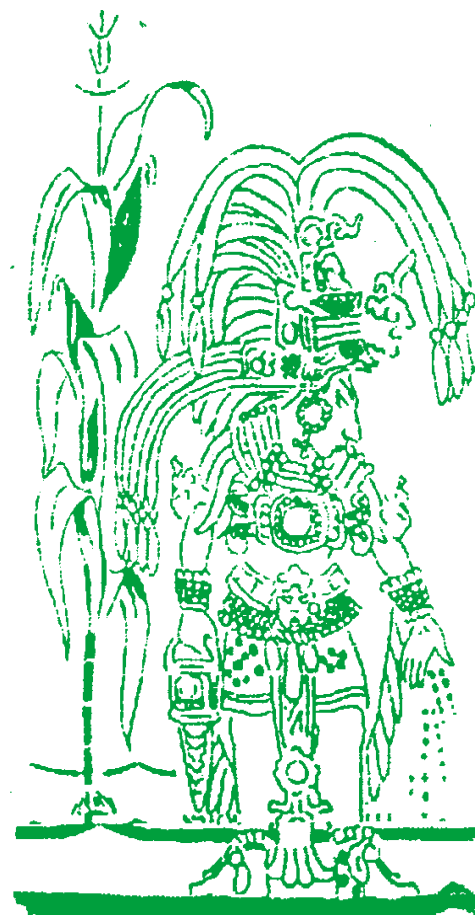
one of these two methods.

Patel Bhaktibhai Punjabhai, Vill: Deriya, Tal: Vijapur, Dist: Mahesana, Comm: Patel Ramesh A.

3013 Bone Fracture

A paste of fenugreek (locally 'Methi' (*Trigonella foenum-graecum*) seeds, pounded into flour, and water is applied to the area of the fracture and bandaged. Bamboo strips are lashed on for support and the preparation is left undisturbed for 15-20 days. Fenugreek is usually grown with lucerne during the winter. The seed is treasured for its medicinal qualities.

Patel Pratapbhai M Vill: Vadi, Tal: Shahera, Dist: Panchmahal, Comm: Bhabhor Karansinh B.



3014 'Valo'

19

The affected animals become docile and immobile as a result of this disease. Some farmers cure it by forcing the animal to stand or float in deep water. Another method is to startle the animal with a black cloth or with some noise so that it gets up and becomes active. In either case 200 g tea powder boiled in one liter water is given to the animal.

(TCL: Inflammation of muscles causes severe pain which makes the animal docile and immobile. To force the animal to stand may help to avoid some complication such as leg weakness. But to force to float in deep water is not advisable.

The tea powder contains alkaloid theine which is nervine stimulant, restorative, exhilarant (cheer mind) and beneficial in neuralgia hence, it is good to apply.)

But has any research been done on this use? Ed.)

Patel Bhikhabhai Somabhai, Vill: Valevada, Tal: Patdi, Dist: Surendranagar Comm: Charkata Babu G.

3015 Ingrown Horn Wound

As an animal ages, its horn often curls so that it penetrates the head or the lower portion of the horn. Not only is this deformed horn easily broken, but the wound is susceptible to infection. To treat the wound, a few human hairs are added to a paste of 'Nagli' (Eleusine coracana - a minor millet) flour and water. This paste is applied and the wound is bandaged until the wound is healed. This practice has existed for at least 15 years. Ravjibhai Vasava recently used it with success.

Vasava Ravjibhai Humiyabhai, Vill: Nana Mandala, PO : Mota Mandala, Tal: Dediapada, Dist: Bharuch, Comm: Chauhan Vijaysinh A.

3016 Weakening of Teeth

Animals are not able to eat if their teeth become loose. One part bark of 'Khatamadi' (Pavonia ceratocarpa) and one part bark of 'Ambala' (Emblia officinalis) are crushed with two parts root of 'Saslanu heju'. This pounded mixture is given to the animal along with water. 'Khatamadi' and 'Ambala', being trees, can be found throughout the year, but 'Saslanu heju' is available only during the monsoon season. This remedy has been practiced for many years in this area.

Chaudhari Kuvarjibhai Chhaganbhai, Vill: Kavachiya, Tal: Valiya, Dist: Bharuch Comm: Chaudhari Vanjibhai L.

**3317 Flatulence**

The seeds of 'kakdi' (cucumis sativus - a creeper in the Cucurbitaceae, bears long fruits that are eaten as a table vegetable) are pounded and then soaked in water for 2 hr. This preparation is given orally twice per day until the animal is cured. At least 50% relief can be expected 4-5 hr. following the first dose. Roughly half of the farmers in this village are using this treatment.

Patel Aapsinghbhai Vabhabhai Vill: Tadi, Tal: Shahera, Dist: Panch Mahal, Comm: Bhabhor Karansinh B.

3018 Inflammation of Udder

Udders become hard and swollen so that the cow refuses to give milk (may be Mastitis?). Sometimes udder becomes inflamed and pus comes from the teats at the time of milking.

a) White Alum

White alum (aluminium or potassium sulphate) is dissolved in water and the solution is sprinkled over the udder before milking. Sometimes a hot salt solution is sprinkled over the udder for the same purpose.

Vankar Manekben Somabhai (C/o Vankar Somabhai Tejabhai), Vill: Jaydevpura, Tal: Kadi, Dist: Mehsana, Comm: Parmar Daxaben R.

b) Leaves of Aegle marmelos and Cenchrus spp

Leaves of 'Bili' (Aegle marmelos) and 'Dhamano' (Cenchrus spp) are collected in equal quantity and crushed together. The mixture is suspended in water and sprinkled over the udder frequently in a dry (this mixture is not given orally to the animal), if pus comes from the inflamed udder. A cure follows in a few days.

Nareshbhai C Chaudhari Vill: Navijamoli, PO: Kavachiya, Tal: Valiya, Dist: Bharuch; Comm: Chaudhari Vanjibhai L.

3019 Food Poisoning**a) Soil of Termite Mound**

If an animal feeds too extensively on immature sorghum or the first cutting of lucerne it often results in an ailment called 'Mino'. Symptoms of this are restlessness and discharge. Soil from termite mounds is rubbed thoroughly for 5-10 min onto the inner and outer wall of the mandible (jaw) and this is repeated frequently for three days. Since this remedy has yielded success for ages, farmers use it with confidence.

Mer Ravjibhai Somabhai, Vill: Krishnapura, Tal: Talaja, Dist: Bhavnagar, Comm: Dhandhalya Bhargav K.

b) Mixture of Ash and Jaggery

The ash from burning 500 gm newsprint is mixed with 1 kg of jaggery and is rubbed for 20 min. on the entire inner side of the animal's jaw. This is repeated after 2 hr. and relief can be expected within 4-5 applications. Chauhan Arjanbhai Ramabhai Vill: Chhaya, Tal: Ghogha, Dist: Bhavnagar, Comm: Dhandhalya Bhargav K.

3020 Poultry Disease Management**a) Mixture of onion, garlic and Cuscuta reflexa**

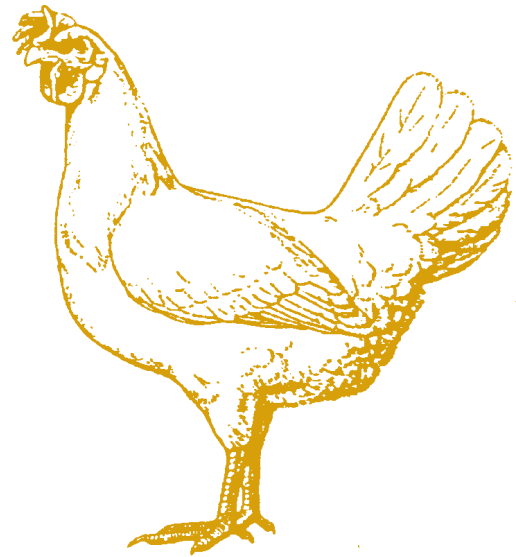
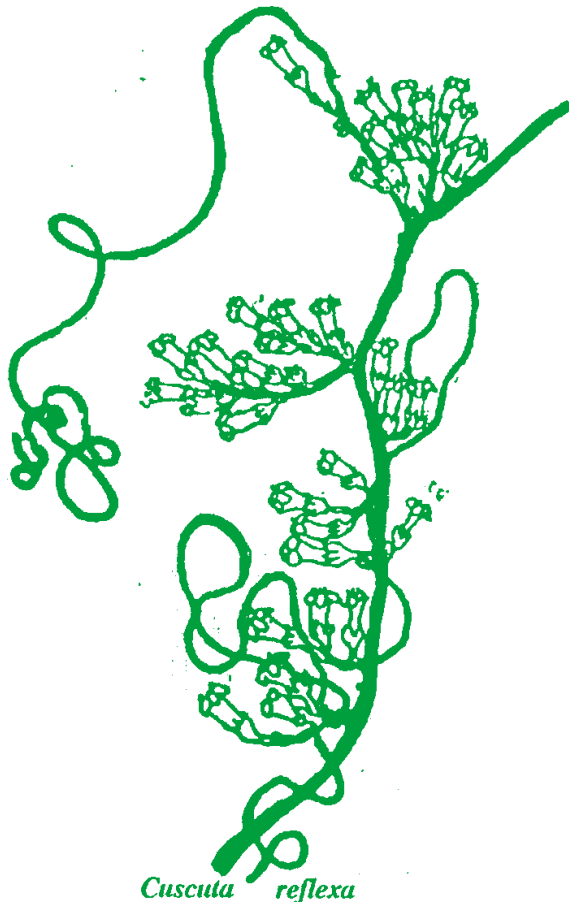
Chickens can be inflicted by a disease that causes listlessness and inactivity. It is contagious and the mortality rate is high. As treatment, onion and garlic bulbs are pounded together with the vine of 'Amarvel' (*Cuscuta reflexa*) and this mixture is added to the birds' drinking water. 'Amarvel' is a leafless greenish yellow parasitic plant, commonly found on hedges and forest trees.

Surkiyabhai Chandiyabhai Vasava, Vill: Kakadkui, Tal: Valiya, Dist: Bharuch, Comm: Chaudhari Vanjibhai L.

b) Rabbit's Ceces and Cuscuta reflexa Mixture

Poultry are susceptible to a highly contagious disease, contractable any time of the year, known as 'Zukava'. Rabbit feces (locally 'sasla') are mixed with vines of 'Amarvel' (*Cuscuta reflexa*), which have been crushed and soaked in water for a day. Relief comes within a day after feeding this concoction to the birds. This remedy is practiced by most poultry keepers in the region.

Falgumbhai D Patel, Vill: Vandarvela, Tal: Vansada, Dist: Valsad, Comm: Patel Shantaben G.

**c) Black Pepper and Pearl Millet Flour**

Chickens sometimes suffer from a disease characterised by frothing at the mouth, frequent cackling, restlessness, and reduced food intake. If it is a male chicken the comb (locally 'kalgi') becomes dark red and a spine-like structure appears on the tail. A northern Gujarat remedy involves removing the spine-like structure with a knife and applying turmeric powder to stop the bleeding. In addition, 10 to 15 black pepper corns are grounded and mixed with pearl millet flour and water so that small pellets can be formed. When fed to the chicken, their mixture increases body heat and voiding of excrement. It subsequently rids the bird of the disease.

Parmar Ramanlal, Vill: Sonasan, Tal: Prantij, Dist: Sabarkantha, Comm: Parmar Tarulata R.

Letters to the Editor

Vaidyam M Sugathan
Olavainnu Post, Kerala - 688560

I consider it honor to take up the responsibilities for a 'Malayalam' edition of the Honey Bee. I am planning to publish our journal *Vikasanavaxtha* (Development news) as Honey Bee specials with the Malayalam version of matters supplied by you. I have already obtained the registration from the registrar of newspapers and the postal authorities. We shall discuss the details later.

(Malayalam edition has been adde please contact Mr. Jacob Mani Mannothe, Adviser Officer (Rubber), R&D Centre for Rubber, UPS\ASI, Union Club Road, Kottayam-686001, Kerala. He is also taking help of Mr. Sugthan as well as three other colleagues : Ed.)

Rajeshwar Dayal
National Research Development Corporation, 20-22, Zanroodpur Community Centre
Kailash Colony Extension
New Delhi 110 048

I read with interest the article "Protecting Rights of Grassroots Innovators" by Mr. Dibeyendu Ganguly in "Indidn Express". I was happy to learn that you have started a journal and are actively documenting innovations by farmers and artisans and are lobbying for the protection of intellectual property rights for these innovations. *(I hope, you will get involved, Dr. Dayal! Ed.)*

Naseeb H Dajani
Chief Technical Adviser
Global Harmony Foundation
Rotiquai 16, P I B No. 459
Ch-4502, Solothurn, Switzerland

I shall gladly pass Honey Bee to a member of our Board who produces magazine in German. I am sure he will include in future issues some of the down-to-earth wisdom from the Indian farmers recounted in your magazine.

Chris Evans
Nepal Community Support Group,
G P O Box No. 3724,
Katmandu, Nepal

We are keen to bring out a "Nepali" version of Honey Bee so that our farmers can be part of the grassroots network. Please provide us with the back issues in English and Hindi and a current subscription (membership of Network). It is much easier to read and translate from Hindi than from English and many people here including farmers, are able to read Hindi. This alone would be an inspiration *(Chris, we are very much eager to see it: Ed.)*

Sukla Mitra
Development Research
Communication and Services
Centre
18-B Gariahat Road
Calcutta 700 031

Your newsletter is very useful as a networking tool. We are an NGO engaged in regenerative agriculture among West Bengal farmers at the grassroots level. We are also a networking and documentation centre. We wish to exchange with you our quarterly publication 'Debacle' and bi-monthly 'Awareness Letter'.

Also available is a report on the practical expcperience of grassroots groups in regenerative

agriculture. (We recommend readers to write to Sukla about both publication. There are excellent source of contemporary debate on alternative development : Ed.)

D M Maurya, Dean
Narendra Deva University of
Agriculture and Technology

I congratulate for your dedicated effort to bringing out an excellent journal. It is most informative and a really great contribution (Dr. Maurya, himself has done very god work on farmers' innovation. We hope, he will contribute to HB too).

R N Roy
Senior Extension Adviser
Bay of Bengal Programme
91 St. Mary's Road
Abhiramapuram, Madras 600
018

The task you have taken up to document indigenous knowledge and innovation is very important. It is on this foundation tht the sustainable development of natural resources has to be built. Of particular interests to me is information relevant to people who depend on forsts and aquatic (particularly marine) resources for a living, the sustainable use of these resources and their management at the community or at the level at which the actual users work. Therefore, I would like to propopse you include fisher-folk in your coverage (Why not Readers like Dr Roy help us by contributing article on fishermen and women's indigenous knowledge system : Ed.)

T G K Menon
Kasturbagram Krishi Kshetra
P O Kasturbagram
Indore 452 020

I am extremely happy to know that at last the scientists have started recognizing our traditional practices in agriculture, animal husbandry, public health etc.

Ms C P Jayalaxmi
Energy Environment Group
Post Bag No. 4
New Delhi

Feedback is of course, an important element in the performance of a newsletter. Besides reaching out to the new and conventional audience which is as yet insensitive to sustainable development issues it the crucial requirement.

Honey Bee Welcomes You

Two scholars, Kristin Cashman and William Gibson, arrived from the U.S. in October. They will be conducting field-based research on traditional ecological knowledge, specifically integrating this knowledge into rural curricula in tribal areas of Gujarat State.

Dr. Cashman assisted Director D.M. Warren at the Center for Indigenous Knowledge for Agriculture and Rural Development (CIKARD) at Iowa State University where she completed her Ph.D. in Agricultural Education and extension. She has lived and worked in West Africa, collaborating with small farmers and scientists from the International Live stock Centre for Africa (ILCA), the International Institute for Tropical Agriculture (IITA), and the Univ. of Ibadan, Nigeria.

Dr. Gibson also comes to us from CIKARD. His work as an ecologist has been on the importance of mutualism in the evolution of natural communities, and the importance of forest fire in maintaining biodiversity. He has consulted for Sandoz and the Swiss National Fund on the coevolution of humans and traditional agricultural landscapes; and also with US state and federal agencies on the environmental sustainability of agricultural systems. He founded and directed a center for researching indigenous small sailboat designs, for building craft with traditional methods and materials, and for inspiring and educating others in the endeavour. He has also worked extensively in the areas of energy conservation/appropriate technology, consumer cooperatives, and environmental conservation.

News & Views

The Queen of the Maya

The United Nations General Assembly proclaimed 1993 as "International Year for the World's Indigenous People. "it is befitting, therefore, that Rigoberta Menchu won the 1992 Nobel Peace Prize for promoting indigenous peoples' rights. A Quiche Maya from Guatemala she is descended from the original inhabitants of, what came to be known after Christopher Columbus' discovery as North and South America. Menchu grew up watching her people victimized and her culture eroded by government forces descendants from Spanish colonialists. Her 1983 book, "I, Rigoberta Menchu", portrays the triple discrimination she faced on account of her race, class, and gender, making her one of the foremost indigenous, not to mention women's, advocates in the world. In Menchu's book and since her awareness; eloquently describing how indigenous people can persevere with modern societies without the loss of their culture.

National Seminar on Indigenous Technologies for Sustainable Agriculture

National Council of Development

Communication, Varanasi, has organised a national seminar on Indigenous Technology for Sustainable Agriculture in collaboration with Division of Agricultural Research Institute, New Delhi at IARI, New Delhi during 23-25, March, 1992.

For further information, please write to **Dr. B.P. Sinha**, Division of Agricultural Extension, IARI, New Delhi - 110 012. Telephone: 5781434, 5786082 or Dr. V.K. Dubey, Old E/2 Jodhpur Colony, B.H.U. Varanasi - 222 001. Telephone 311974.

(We hope that the organizers would keep up same enthusiasm after the workshop : Ed).



Book Worm

1 Book Review

Sustainable Practices for Plant Disease Management in Traditional Farming Systems by **H David Thurston 1992 Westview Press ISBN 0-8133-8363-3 Oxford & IBH Publ., New Delhi ISBN 81-204-0653-2**

Dr. Thurston, with this new book, makes a valuable contribution to stemming the loss, caused by modernization, of sustainable pest management practices. This extensive literature review of traditional farming systems highlights small farmers as the most important element for developing countries in their attempt to achieve a more sustainable and ecologically sound future.

The book consists of four major sections: Application of Chemicals, Biological Control, Cultural Practices, and Host Plant Resistance. Under Application of Chemicals appears recommendations such as the use of drying agents such as ashes and chalk, as fungicides during crop storage, and the use of natural or non-toxic pesticides, such as amurca (the liquid waste remaining after olives are processed) for control of insect vectors and pathogens. Under Biological Control, Thurston covers topics such as the use of antagonistic plants, in the management of nematodes and other soil borne pathogens.

Twenty of the book's 25 chapters (titles are denoted by bold letters) are under the Cultural Practices section. There is a chapter on the Manipulation of Shade (from other plants) for disease control. In Sanitation, one learns of the

importance of cut with sterile tools or even uncut material. For example, planting.

Whole, rather than cut, potato tubers prevent losses due to fungi and bacteria. Under Land Preparation practices (a subsection of Cultural Practices), Thurston points how many development professionals fail to recognise the effectiveness of Fire and Slash and Burn for disease management farming systems. For example Shekhawat et al. (1998), documented the effective control of bacterial wilt (*Pseudomonas solanacearum*) in potatoes by "Jhuming", a slash and burn practice used by tribal people in the eastern hills of India. Raychaudhuri's work (1964) is the source of numerous examples of the usefulness of Organic Soil Amendments developed under traditional farming system regimes. Though it is Crop Rotation that comes across as probably the best documented traditional disease management practice.

Multicropping undoubtedly goes back to the beginning of agriculture. Thurston uses a number of references to suggest that it was practiced in India at least as early as 1000 B.C. and that it was borrowed from Indian farmers and adapted by the Persians, Romans, and the Chinese. The proven advantages for managing plant diseases and maintaining yield stability that are associated with high inter- and in-transpecific diversity are presented. Similarly, Multistorey Cropping and traditional Household Gardens prominent in tropical areas for centuries without major disease problems, may well

provide useful models for other areas of the world (cf. Permaculture (Mollison 1998) revival in the current day). Traditional farmers probably far outdistance agricultural scientists in knowledge concerning Site Selection and Adjusting Time of Planting.

Thurston stresses the importance of efforts such as those of CGIAR (Consultative Group in International Agricultural Research) centres (and laments the relatively small budget on which network allocates for indigenous knowledge system!) toward conserving germplasm diversity. Also, the point is made that it is important to preserve the knowledge of these "traditional" practices that are inseparable from the DNA information. It should be recognized that, unless we wish genetic engineers and corporate directors to replace seemingly valuable traditional landscapes, those that have co-evolved since time immemorial, with a rapid redesigning, the 'when and where' on a complex landscape it is optimal to disperse the germplasm is very important. Without this knowledge the vast array of gene banks containing the DNA sequences are of little use. In the last section, Host Plant Resistance is a discussion on the prospect of conserving traditional cultivars within traditional agricultural systems (often termed In Situ conservation). References concerning "living-Gene Parks" such as the "Kuna Yala" Indigenous Reserve Park in Panama are provided.

The overall tenor of Thurston's book is reflected by a statement, appearing in Selection, Diversity, and Resistance, "Agricultural

scientists must balance the advantages of high levels of interspecific and intraspecific diversity for managing plant diseases and maintaining yield stability provided by many traditional farming systems against the positive economic advantages but serious risks of modern agricultural practices and the new high-yielding varieties." In light of pursuing such balance, Thurston single-handedly (according to the preface, this manuscript was produced without outside funding) has added weight to the traditional farming system pan.

Bharat Ki Chhap, The Identity of India- A companion book to the film series on the history of science and technology in the Indian sub-continent. Presented & supported by *National Council for Science & Technology Communication, Department of Science & Technology, Government of India*, written by Chayanika Shah, Suhas Parajhpe, Swatija Manorama; Bombay, Comet Project, 1992

A series of thirteen video cassettes, each of 50 minutes of duration with a companion book on the identity of India is a major contribution to the study of science, history and society. Covering a period from Stone Age to present date is not an easy job, that too when some fundamental questions have to be raised about the way identify of a secular society should be forged. The book includes a summary of the ideas presented in the film and also how one learns in the film and also how one learns in an inter-disciplinary manner.

What is extraordinary about this book is the self-critical questions that the team members (who did research for the film series) ask about their own learning as well as

the work of each other. Many bold statements have been made. For instance, Nissim questions the idea of an Aryan invasion as understood in the history. He adds after decrying the tendency to consider Aryans as a separate race superior and most advanced, "therefore, as their descendants, we too were the most advanced, the argument said. How easily self-glorification and complacency creep in, disguised as self esteem!" The examples of Shringaverur reservoir system for storing water and evolution of Ayurvedic science of medicine and surgery together with discourse on Astronomy, mathematics and temple architecture provide a broad sweep of scientific and intellectual heritage. The book makes no attempt to mask the philosophical and ethical questions inherent in any study of knowledge systems. The questions of progress as well as stagnation in mathematics are raised. The emergence of new identify through incorporation of not just cultures but also technologies brought by the Muslim and other influences is used to provide the setting for contemporary India.

This is a book provide distinctive introduction to Indian identity, scientific heritage and above all a statement about learning creatively. The values implicit in dealing with history and society are made explicit. Those who wish to buy the book and/or the complete set of thirteen VHS cassettes should contact: Comet Media Foundation, Topiwala Lane School, Lamington Road, Bombay 400 007, India.

Lecture: Who needs Folklore? By A.K. Ramanujan, First Rama Watumall Lecture on India, delivered at the University of Hawaii which appeared in *Manushi*, Vol. 69, March 1998, pp 2-16.

Folklore is often dismissed away as

a collection of superstitions or old wives' tales by researchers studying Indian civilization. However, there is a lot more to folklore; in fact it forms the base of the vast body of Indian literature. The author examines the importance of oral tradition which, according to him, is dynamic, responsive to new stimuli and evolves accordingly.

He gives some interesting examples. Among them is a north Indian oracle rendering of the Ramayan wherein in the scene depicting Sita's Swyamvara. There is a Englishman with his solar topee and rifle who comes to woo and win Sita's hand in marriage (a commentary from colonial times obviously).

The author also explains how folklore is used to humanize gods and goddesses and morroring human life.

All these are reflections of a living culture which was totally ignored by scholars till recently: they tended to look merely at Sanskrit texts and literature. The author likens their efforts to a person searching for a lost item under a lamplight not because it was lost there but because it is the only place where he can see clearly. For a better understanding of a society, the author urges students of Indian civilization to carry the lamp to illuminate the shadowy area where the wide base of the vibrant folklore culture lies.

The full text of the lecture appeared in *Manushi* Vol. 69 p.2-16

News letter Review: The Smallholder- For the Exchange of Ideas & Information between Country People

Like its southern soulmate, the *Honey Bee*, the Canadian newsletter, *The Smallholder*, provides a forum

for the exchange of information and ideas of country people. Although The Smallholder's mission involves rural folk in more temperate zones, much of the experimental ethic and spirit of learning from each other is relevant to rural people everywhere. Like the staff of the Honey Bee, the editors of The Smallholder depend and rely on active participation and contribution from their readers. These readers share knowledge and ideas in the form of

remedies, proverbs, pictures and articles in the areas of Agriculture, Forestry, Aquaculture, Environmental technology and innovation, issues relevant to rural lifestyles and other pertinent topics.

Again, like the Honey Bee, the philosophy and development of The Smallholder promotes co-operative thought and action consistent with and sensitive to the laws of nature. For a free complimentary copy and

further information on subscriptions you should write to: The Smallholder, Argenta, B.C; Canada VOG IBO.

Don't forget to mention that you learned of their newsletter in the Honey Bee and your country and occupation (the cost of the newsletter may be discounted depending on need).

Subscription for the Honey Bee Network

Dear Readers

We have shared with you more than three hundred innovations and illustrations of farmers' wisdom in the last six issues of **Honey Bee**. If you have found the newsletter interesting, we invite you to join the **Honey Bee Network** by sharing the cost of keeping network active. So far we have managed the network and publication of the newsletter through our own resources. The contribution received from India (Rs. 22000/-) and from abroad (US\$ 300) have totaled to a sum of Rs. 31000/-. This meets hardly to cost of editing & printing of one issue (2000 copies). We will continue to send this to all those who like to contribute to the growth of idea in cash or kind (by sending articles, reports and news about people's creativity and innovation for sustainable technologies and institutions).

Please write back suggestions for improvement and how you can share the burden of keeping this global but third world based network of scientists, NGOs, farmers, artisans, professionals, activists, political leaders etc., active.

Category	International	National
<i>Annual Membership</i>		
Patron	US\$ 200 or above	Rs. 2000/- or above
Supporter	US\$ 50	Rs. 500/-
Scientist/Professionals	US\$ 30	Rs. 120/-
Foreign aided NGOs	US\$ 25	Rs. 200/-
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This membership entitles you to receive the newsletter and other information about the network. Please send your contributions in the form of bank draft/postal order/money order in favour of **SRISTI** C/o, Prof Anil K Gupta, Indian Institute of Management, Vastrapur, Ahmedabad - 380 015, India