

Magazine on Low External Input Sustainable Agriculture



LEIS INDIA



Education for change

LEISA India is published quarterly by AME Foundation in collaboration with ILEIA

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PRINTING

Nagaraj & Co. Pvt. Ltd., Chennai

COVER PHOTO

Farmers in Tamil Nadu learning through Farmer Field School.
(Photo: S Jayaraj for AME Foundation)

The AgriCultures Network

LEISA India is a member of the global AgriCultures Network. Seven organisations that provide information on small-scale, sustainable agriculture worldwide, and that publish:

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BAOBAB (*East Africa, in English*).

The editors have taken every care to ensure that the contents of this magazine are as accurate as possible. The authors have ultimate responsibility, however, for the content of individual articles.

The editors encourage readers to photocopy and circulate magazine articles.

Dear Readers

Small scale farmers who are already grappling with a number of challenges like low yields, natural resources degradation, uneconomic holdings, lack of access to resources etc., are unable to cope with the changes in the external environment, which are happening at an alarming rate. There is an urgent need to educate, motivate and encourage small farmers in adapting quickly to these changing circumstances.

In such situations, a number of education models and institutions are emerging for small farmers and rural youth. This issue of LEISA India focuses on such local alternatives that are emerging for small farmers. You can download the issues of LEISA India (English as well as language editions) from our website www.leisaindia.org

We are getting very encouraging response to our Readers Survey. While we thank all those who responded quickly, we request all those who have not yet responded to send in the filled in survey forms, as feedback from every reader of our magazine is precious for us to be able to be more purposeful.

While we thank all those readers who have been contributing voluntarily for the magazine, we request you to continue supporting us. To enable us to share a printed copy with you during the year 2014, kindly send your contributions along with the enclosed form.

The Editors

LEISA is about Low-External-Input and Sustainable Agriculture. It is about the technical and social options open to farmers who seek to improve productivity and income in an ecologically sound way. LEISA is about the optimal use of local resources and natural processes and, if necessary, the safe and efficient use of external inputs. It is about the empowerment of male and female farmers and the communities who seek to build their future on the bases of their own knowledge, skills, values, culture and institutions. LEISA is also about participatory methodologies to strengthen the capacity of farmers and other actors, to improve agriculture and adapt it to changing needs and conditions. LEISA seeks to combine indigenous and scientific knowledge and to influence policy formulation to create a conducive environment for its further development. LEISA is a concept, an approach and a political message.

MISEREOR founded in 1958 is the German Catholic Bishops' Organisation for Development Cooperation. For over 50 years MISEREOR has been committed to fighting poverty in Africa, Asia and Latin America. MISEREOR's support is available to any human being in need – regardless of their religion, ethnicity or gender. MISEREOR believes in supporting initiatives driven and owned by the poor and the disadvantaged. It prefers to work in partnership with its local partners. Together with the beneficiaries, the partners involved help shape local development processes and implement the projects. This is how MISEREOR, together with its partners, responds to constantly changing challenges. (www.misereor.de; www.misereor.org)

AME Foundation promotes sustainable livelihoods through combining indigenous knowledge and innovative technologies for Low-External-Input natural resource management. Towards this objective, AME Foundation works with small and marginal farmers in the Deccan Plateau region by generating farming alternatives, enriching the knowledge base, training, linking development agencies and sharing experience.

AMEF is working closely with interested groups of farmers in clusters of villages, to enable them to generate and adopt alternative farming practices. These locations with enhanced visibility are utilised as learning situations for practitioners and promoters of eco-farming systems, which includes NGOs and NGO networks. www.amefound.org

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ILEIA – the centre for learning on sustainable agriculture is a member of AgriCultures Network which shares knowledge and provides information on small-scale family farming and agroecology. (www.theagriculturesnetwork.org). The network, with members from all over the world - Brazil, China, India, Kenya, the Netherlands, Peru and Senegal, produces six regional magazines and one global magazine. In addition, is involved in various processes to promote family farming and agroecology. The ILEIA office in The Netherlands functions as the secretariat of the network.

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Learning on the farm

Kafle Narayan and Binod Ghimire

Farmers in Takuche village in Nepal learnt eco-friendly ways of managing pests in apple orchards through Farmer Field School. The year long school also enriched them with the knowledge of better management of the orchards. Today, Takuche farmers are less concerned about pest attack as they are empowered with the knowledge of raising a 'healthy' apple orchard.



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The ICT based agricultural education has the potential of empowering farming communities by improving access to information and knowledge sharing. The Village Knowledge Centers in North East India is one such initiative which uses ICT as an educational tool.



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Enhancing knowledge through cultural exchange

Harish Tewari and Poonam Tewari

To impart organic farming education to the new generation that heavily relies on chemical farming, WWOOF INDIA is making an attempt to link young professionals across the world with the organic farms in India. Through its various programmes, WWOOF is not only helping farmers adopt organic farming practices, it is providing hands on experience on farming and organic production for the students, also facilitating cultural exchange among various countries.



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Retaining youth in farming sector

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Finding agriculture unremunerative, a number of youth are seeking livelihood opportunities outside agriculture. To address this issue, The School of Biodynamic Farming has initiated a two-year course for training rural youth in making agriculture sustainable as well as profitable.



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Education for change

Farming in India can be visualized as having multiple faces. The farming majority are small holders, caught in fragile eco systems. For them, it is a means to pursue livelihoods with small marketable surpluses. For the enterprising few, it is a market driven enterprise. Changes are seen on many fronts - the types of crops grown - less for sustenance and more for the market; nature of inputs that go into farming – more chemical and less organic; hybrid seeds in place of own, traditional seeds etc. These changes are happening at a rapid pace. Most of them are triggered and supported by government policies, too. Along with these, there are a number of national policies which have a short term welfare perspective too which pose new challenges. For example, farm labour threatening programmes like MGNREGA, the recently approved Food Bill..., the leaning towards public private partnership based industrial agriculture models, all these do have an impact on the small farmers and their ability to pursue farming. With globalization and trade distortions, farmers need to be aware of new challenges which are emerging. Moreover, the farmer is burdened heavily to cope with accentuated climate changes.

Thus, small farmers who are already grappling with a number of challenges like low yields, natural resources degradation, uneconomic holdings, lack of access to resources etc., are lost in an environment which is continuously changing at an alarming rate. Also, with a non existing extension system, the farming communities are increasingly getting disillusioned. There is an urgent need to motivate, encourage and educate small farmers in adapting quickly to these changing circumstances. Most importantly, today's farmer's needs are not just technical. Farmers need to be educated and empowered to manage his farming livelihood. His knowledge and skills need to be enhanced to expand his opportunities to earn income from various farm related enterprises.

More of the same doesn't work

Farming communities are not a homogenous lot. They have different needs, aspirations and abilities. Agricultural education is a complex, social engineering process. It requires clear goals, synergies of competencies to guide farmers to improve their livelihoods as well as contribute significantly to economic well being, locally as well as globally. There needs to be an urgent appreciation of this stark reality. Also, constantly ignored is the evergrowing food needs of the growing population, the ecological degradation threatening survival of the planet earth, and, clueless future on how the vast displaced farming majority could be absorbed into alternative vocations.

Since long, educating farmers has been perceived as one of the development activities by the government, through its extension

systems. The focus of these extension systems has been limited to providing inputs, reaching out to mostly the elite ones. The focus now needs to be shifted to small farmers, who form the majority and contribute significantly to the food security of the nation. They need to be guided on what they know and want to pursue, with **dignity**. Being resource poor and risk shy, they need to be organized into groups, so that they can learn and pursue practices that are sustainable and locally relevant. In many areas, we see that this is happening, mostly with the support of NGOs. Farmers are being organized and educated through a season-long process called Farmer Field Schools (FFS). FFS provides farmers an opportunity to organize themselves, meet, discuss and learn the agro-ecological way of farming by way of 'discovery learning'. Of late, we see that the mainstream programmes also in some countries are reaching out to small farmers by organizing them into small groups. For eg., the National IPM Programme of Government of Nepal organized FFS for farmers in Takuche village in Nepal. Having empowered with the knowledge of raising a 'healthy' apple orchard through Farmer Field School, these farmers are now less concerned about pest attack (Kafle Narayan and Binod Ghimire, p.10).

Agriculture is no longer seen as a remunerative livelihood option, especially among the youth. Also, youth lack the knowledge of sustainable agricultural practices and see no hope in continuing farming the way their parents have been doing. Disillusioned with farming, these rural youth are migrating to towns and cities seeking non-agricultural opportunities. It is important to see that the younger generations do not abandon agriculture, lest the food production would seriously be hampered. Many initiatives are therefore aiming at holding youth in agriculture. For example, through an innovative pilot programme on training rural youth in sustainable agriculture, the Ministry of Agriculture Development in Nepal succeeded in addressing two major issues – food security and rural employment. The Department found that youth who were familiar with the locality, were much more acceptable by the communities and their words, ideas and techniques were easily heard and adopted. (Dipendra Pokharel and Resona Simkhada, p.34). The School of Biodynamic Farming is another example where in rural youth are trained in sustainable agriculture through a two-year course (D.Thangapandian, p.25). Many such interesting experiences have been shared earlier in our issue on rural youth (LEISA India, Volume 13, No.1, March 2011).

The ICT enabled extension educational systems are emerging as a key opportunity for changing agrarian situation and farmers' lives by improving access to information and sharing knowledge. ICTs like internet, village knowledge centers, digital videos and mobile phones are being increasingly used to impart agricultural education

(Saravanan, p.15). Plant health clinics is another ICT initiative tried in Bangladesh to link the coastal farmers with the scientific knowledge, which is proving successful. (Tithe Farhana, p.27)

There are a number of players involved in providing educational services to farmers, in their own way - government through their extension systems, research institutions through their research agendas, NGOs through their field programmes. Also, we see many private institutions, like the fertilizer and pesticide companies providing technology transfer and advisory services. Each agency promotes what it thinks to be best – generally for increasing yields, often neglecting the farmer and the resources involved in promoting a particular technological option. While every institution is bound to operate within its institutional framework, increasingly organizations are working in partnerships to complement the strengths of each other. Plant health clinics in Bangladesh is one such initiative tried through a partnership between the Bangladesh Rice Research Institute and the Department of Agricultural Extension. The E-Arik Center is another example of partnership between the Central Agricultural University and the Krishi Vgyan Kendra. (Saravanan, p.15)

The role of a farmer as an educator cannot be under estimated. Increasingly innovative farmers with tremendous knowledge and experience are perceived as resource persons in educating not only other farmers but also those interested in the farming sector. Farmer to farmer exchanges are being encouraged. Attempts are also being made to educate the young professionals across the globe in organic agriculture by linking them with the farmers in India. For example, WWOOF INDIA through its various programmes, is providing hands on experience for the students from various countries on farming and organic production. (Harish Tewari and Poonam Tewari, p.21)

Building social capital

Education to farmers needs to be an empowering process. It ought to be a dynamic and systematic process bringing an overall change in the behavior of the farmer. It should help the farmer cope with the changes that are happening around him and influencing agriculture. Ultimately, it should help him/her in pursuing agriculture in a sustainable way, while producing safe and healthy food for the family and the community at large. By the end of the process, it is not that a group of farmers become adept at practicing alternatives, but are motivated to guide the whole community to adapt to changing situations. The education process should result in building ‘social capital’ in the villages.

While some of the initiatives mentioned above bring in a hope, yet they are seen only as ‘islands’ of success. If farmer education has to become a truly educational experience, then there needs to be a complete overhauling of the extension and educational systems, prevailing, if any. Firstly, what is the content which should be delivered? Do we continue to promote high chemical, high expensive options or do we offer the alternatives which are less resource intensive and less expensive. Is the local knowledge being integrated or ignored? We need to be cautious about whether the message is relevant for the local conditions. This means that the



Photo: Dipendra Pokharel

Trainees learning to handle a hand tractor for land preparation

curriculum or content should be tailor-made and not a blanket/universal prescription offered to all. Secondly, how are we delivering it? Are we simply pushing the technologies, are we using only the ICTs for the ease of their use and reaching a larger number of people? Are we spreading out thin without having an impact? Partly, the answer lies in using a multitude of methods and tools to have an impact and not just a single one. And finally, who teaches and who learns? Is it the farmer alone that learns, all the time? Does the external person also learn from the process? Is he/she competent enough as an outsider to educate farmers who know much better than them about local practices and situations? What attempts are being made to upgrade oneself as an educator? Are the educators empathetic and sensitive to farmer’s needs, changing aspirations and circumstances?

There are a number of questions that we need to think through before embarking on a process of educating a resource poor farmer. It is ironical that farming is the only profession where in a farmer who is the practitioner, experienced with his ground realities, has to listen to people who are totally alien to the situation. If we really mean to educate farmers, let’s make this process a more interactive and meaningful one, where ‘learning’ and ‘unlearning’ are equally important.





Traditional migratory pastoralists were taught to respect environment and society

Surviving the winds of change

A shepherds dilemma

Nitya Sambamurti Ghotge

In the information age replete with cell phones and the internet, traditional knowledge is not adequate to meet the challenges and changes happening at an alarming rate. Small farms and livestock holdings are severely affected and are disappearing at a bewildering rate unable to cope with such changes. A complete overhaul of the present extension and education system may be one of the solutions to help farmers cope with the fast changing external environment.

Khandu Kolpe learnt shepherding from his father, he learnt about lamb care watching his mother tend to young ones as they were born. He also learnt by observing and helping his uncles and aunts and grand parents. He learnt about plants from the farmer in whose farm they would pen their sheep through the long summer. This was before there were extension and development workers, televisions or telephones. Khandu Kolpe cannot read or write. Whatever he knows is etched in his memory Khandu is a Dhangar, a member of a migratory shepherding community of Maharashtra in India. In India, till date, most sheep are farmed by migratory pastoralists pursuing livelihoods in a traditional way.

For hundreds of years his community has practiced shepherding. The collective knowledge and wisdom of the community is captured in their day to day practices, in their songs and dances and stories which they listen to from their village elders on special nights in an open class room lit by a thousand stars and a smiling moon. There are no books, records or papers documenting this knowledge, but knowledge is transmitted from generation to generation through years of practice, doing and observing. It is embedded in their culture, in the sheep they rear, in the blankets they weave, in the grasslands they inhabit.

Khandu has sent his sons to school. The older son was a good student and did well. He was encouraged to go to college and after graduating managed to get a job in the government. He does not help with sheep any more. The second son was not so bright in school and was encouraged to take up shepherding. Every now and then he attends training programmes at the nearest livestock extension centre and comes up with new ideas and plans. Some of these are at complete variance with Khandu's 50 years of shepherding knowledge and his communities, and traditional wisdom. It is modern and delivered in a class room lit by bright tube lights. Presentations are beamed on the wall and brightly coloured charts are used to teach the young students. They come home with pamphlets and brochures in attractive designs and colours.

Khandu reflects on modernity as he rests beneath a tamarind tree in the hot afternoon sun. For instance, last year some sheep died suddenly. When a post mortem was performed by Khandu and his fellow shepherds, they found the tell tale marks of leaf shaped liver flukes. While discussing why there were so many flukes this year a few elderly shepherds mentioned that a certain plant known for keeping flukes away was not to be seen these days. Rather than risk more deaths, efforts were made to try and find grazing grounds where these plants were still prevalent. But that was not easy to find. So many changes had happened to the environment in the recent past that valuable plants were disappearing rapidly from the ecosystem.

The second son had not agreed with the plan to shift grazing grounds. He came up with a bottle of deworming medicine which had been given to him at one of the trainings. Some of the other families whose sons had also attended the programme tried the medicine instantly. A few days later some of their sheep aborted. This was very unusual. There seemed to be a co-relation between the deworming medicine and the abortions. Nobody had mentioned anything about whether the medicine was safe for pregnant animals or not. Khandu forbade the use of the medicine on his sheep.

Most farmers as well as development workers are overwhelmed by the sheer amount of information and have a problem separating useful and relevant information from non useful information.

That was the problem with modern solutions. They were not tested sufficiently and shepherds were expected to bear the burden of the loss. That is why shepherds these days were bringing their animals to the market early. They did not want to rear the animals for too long. Within 2-3 months they were ready for the market. However, the scientists in the extension department insisted that you must keep sheep for 9 months.

"But who listens to shepherds?" mused Khandu. Not the farmers who planted new varieties of cotton on their fields. Sheep while grazing on these fields faced problems which could not be cured with traditional remedies and the team of doctors could not diagnose the condition either. Eventually many sheep died. Instead of a cure for this strange disease the doctors were busy telling shepherds to change their breeds, spray insecticides, use deworming medicines. Were any of these been tested out adequately in field conditions? Could the new sheep migrate, face fodder shortages or disease?" Yes they put on weight alright but if they died on our hands whose loss would it be?" thought Khandu. The insecticides smelt poisonous. But who listens to an old shepherd who wears a turban and cannot read and write and barely knows how to use a mobile.

Today, his son wants gadgets, tractors, threshers, power tillers, motorcycles and of course mobiles which are a big hit. He even knows how to use a computer and access the internet. They receive messages on the weather and the market from the local extension office, but the message is quickly forgotten and difficult to recall when most needed. In the old days, important practices were imbued into people's lives, their culture and daily existence. They were told that the gods would be angry if they did not look after their sheep properly and in a specific way. They were taught to respect the environment and society. They could only begin migration after a special grass appeared in the fields. Khandu's son and his friends laugh at the elders in the community. They considered them not scientific, not modern, and ignorant.

But what is scientific, what is modern what is knowledge and what is wisdom ... the special grass which keeps liver flukes away is seldom to be seen and so are many valuable grasses and medicinal plants. As medicines in bottles become more easily available the medicines from the environment become more and more rare. Everywhere you hear people talk of climate change and it is true it is becoming more and more difficult to predict the rain and the weather patterns. The usual patterns of movement where shepherds depended on certain signs are no more valid. Yes, perhaps traditional systems may no more work for the future but nor will the present modern system. Khandu is certain about this.

Where does the problem lie?

The dilemma faced by shepherds like Khandu is faced by small shepherds the world over as well as small farmers and peasants. Especially, in emerging economies which have catapulted from a pre industrial society to a post modern information age replete with cell phones and the internet. Traditional knowledge is not adequate to meet the challenges and changes today. There are just too many changes happening simultaneously at different levels.



Small farms and livestock holdings are severely affected and are disappearing at a bewildering rate unable to cope. So where does the problem lie?

Information content

Agriculture and livestock care is in a sense the accumulated knowledge of humanity over thousands of years. New information and knowledge is continuously added. In the past, information travelled slowly, and many developing societies remained untouched by advances made by other societies, but today, that has changed. The information revolution has made a lot of current information available at the flick of a button. But it is impossible to absorb and practice all that is new and updated all the time. Small farms especially, find it very difficult.

Information volume

Farming communities are caught in a strange transition period where they are expected to constantly upgrade themselves to match the ever escalating demands of market and society. However, most farmers as well as development workers are overwhelmed by the sheer amount of information and have a problem separating useful and relevant information from non utilisable information.

Small farmers and pastoralists are severely affected by the changes happening around

Source of Information exchange

The sources of information have also increased in the recent past - development workers, NGO's, government extension workers, the radio, the TV, the internet, newspapers, journals, market representatives, mobile messages. However, this load of information does not necessarily translate into knowledge which is useful for farmers. They are also not sure which information is reliable and which one is not. Whom to believe, who is likely to mislead.

Flow of information

The flow of information is largely one way. It flows from the lab or research station or from the policy maker down to the farmer perhaps through an extension worker. There is a definite loss of content as the information flows from one person to the next. There is no proper feedback mechanism to take the spectrum of farmers problems in a coherent way, back to the field and to the policy makers.

It is a little wonder that many new programmes and schemes flounder, collapse and have a low success rate. This is very unfortunate as vast amounts of money has often been spent in initiating these programmes.

Need for a change

The way ahead would need a complete overhaul of the present extension and education system, its aims and delivery mechanisms.

Revising content

This requires a fresh look at farming systems. It requires revisiting traditional practices which stand the danger of getting lost. Do they have answers to critical environmental and health concerns? What needs to be modified and what needs to be retained? As new knowledge is added to the cache, one needs to examine which modern practices are likely to stand the test of time? What practices will survive fluctuating markets and unpredictable weather? What fraction need to be sifted out and carefully synthesized to form a comprehensive body of knowledge which is available to those who need it, especially extension educators and farmers.

Knowledge storage and retrieval

From cloud technology to cold storage labs for genetic material, knowledge today is stored in very different ways from before. However, access and retrieval can be a problem for marginal societies. Public sources of information need to be created which are maintained in the public domain and which give a truthful unbiased and detailed view of different practices citing successes and failures of different programmes. Extension workers need to be directed to these sites from where they can share information with farming communities.

Revisiting training approaches

Different people learn in different ways. Culture plays an important role in determining how people learn. Considerable work has been done on this but more needs to be done as methods of knowledge sharing and flow rapidly change. While tailoring extension programmes to suit different groups it is important to bear in mind that farming communities learn by practice. Sufficient time has to be set aside for training to ensure these practices are carefully transmitted to the farming community along with possible side effects including environmental effects. Repeated visits to the farmers would be needed to identify genuine field problems in adopting these practices and these need to be documented and given as feed back to the laboratories which initiated the practice. Farmers also need to be informed about various sources of information and how these can be accessed. The internet is playing an important role but as mentioned before, too much information can be dangerous as well.

Redirecting the flow of information

The flow of information has to be more than just one way. One of the important roles of extension workers has been that they have been viewed as the agents of change, of taking new ideas from the lab to the field. However, a critical role that they could play in society has been critically ignored, that they could be valuable sources of carrying information from the field to the lab, of new

problems which affect farmers. They are the vital link, the feed back system between the community and scientists and policy makers and a key function of theirs should have been to record data in the field for analysis and action by professionals. This could include, mortality morbidity surveys, records of changes in the field, crop success and failure, uptake of new technology, management practices etc. By encouraging this, not only will their approach towards the society be different, but can actually play a far more critical role in an increasingly uncertain future.

There is much more to be done. As the winds of change sweep over societies they bring in their wake some damage, some succour and some hope. Inevitably, shepherds like Khandu will bend as these winds sweep over them. One only hopes that development efforts in the future provide more succour and hope than damage. And some of their accumulated knowledge and history will steer them safely through to the future.



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Farmer Field Schools

Learning on the farm

Kafle Narayan and Binod Ghimire

Farmers in Takuche village in Nepal learnt eco-friendly ways of managing pests in apple orchards through Farmer Field School. The year long school also enriched them with the knowledge of better management of the orchards. Today, Takuche farmers are less concerned about pest attack as they are empowered with the knowledge of raising a 'healthy' apple orchard.

Mustang, one of the remote districts in Western Development Region of Nepal, is located behind the Himalayan region. Lying between two Himalayan ranges - Dhaulagiri and Nilgiri, it is also the most beautiful place for tourism. Majority of the people living in this region belong to *Thakali* and *Gurung* communities. While apple is the major fruit crop grown, the local communities also grow crops like wheat, buckwheat, barley, potato and seasonal vegetables. These crops serve the food as well as income needs of the communities.

Farmers Field School

Tukuche village lies in the middle part of Mustang district. Farmers in this village have been growing delicious varieties of apple such as Red Delicious, Royal Delicious, Rich-A-Red Delicious. These varieties have been prone to pest attacks. Farmers have been resorting to spraying harmful pesticides to control them. The high levels of pesticide use was having a negative impact on the soil, environment, water resources and human health.

Normally, apple orchards need to include a pollinizer variety in a proper ratio, for better pollination and fruit set. However, farmers were not including Golden Delicious, a polliniser variety is one of the major pollinizer and self-fruitful variety of apple that plays an important role in pollination. However, owing to its low post harvest life, farmers usually do not prefer this variety.

Owing to the high pesticide use, Takuche village was chosen for the IPM Farmer Field School programme supported by the National IPM Programme of Government of Nepal (GON). The technical personnel from District Agriculture Development Office in Mustang, facilitated the IPM Farmer Field School (FFS).



Apple growers participating in the FFS at Mustang

The year-long FFS started during December 2011. Around 20 farmers from the village actively participated in the FFS. Apple orchard with 15-year old trees was selected for conducting the FFS. The FFS was conducted at an interval of 15 days for the entire year. Along with IPM, the FFS included special sessions on various topics.

Two blocks each with 20 trees was earmarked for adopting IPM methods and farmers method for comparison. In the IPM block, different IPM methods including cultural, mechanical and biological methods were adopted. On the other hand, in the farmers practice block, the farmers used their own practices.

Agro-ecosystem analysis was done during every FFS session. Farmers were organized into sub groups. The members of each group discussed and recorded various identified parameters for doing the agro-ecosystem analysis. Analysis was done for both the blocks. After analyzing, farmers presented the results comparing both the methods.

Most of the farmers who were growing nutrient mining crops like maize and potato as inter crops in their apple orchards have replaced them with legume crops, which enrich soil fertility.



Apple grower monitors the IPM plot along with the Agriculture Officers

Results

The year-long FFS gave an opportunity for farmers to interact and learn by doing, resulting in increase in their knowledge levels. They understand that to control fungal disease in apple orchards, all they have to do is to spray of Bordeaux mixture at the right time, which is also safe to soil health, environment and human health. Earlier they were using chemicals like Carbendazim and Mancozeb to control this fungus. Similarly, they now know that insects pests like wooly aphid, san jose scale, red spider mites etc., can be controlled by neem based pesticides instead of chemicals like Dimethoate, Cypermethrin and Endosulphan, which they were earlier using.

Moving beyond IPM, farmers knowledge on apple orchard management as a whole has been widened due to FFS. Now they understand the importance of pollinisers for better fruit set. As one of the FFS participants, Ghale B.K., puts it, *“I had cut five plants of Golden Delicious from my orchard not knowing that helped in pollination. But now I wish to plant them back”*. Farmers understand that there are a number of agro-ecological relationships within an environment and what we practice can have an effect on such relationships. After FFS, they are able to see the relationship between the use of chemicals, the reduced pollination and reduced yields. Hari Prasad Thakali, another participant says, *“due to excessive use of chemical pesticides, the bee colonies have been destroyed that resulted in poor pollination and poor fruit set”*.

FFS has also helped them understand that while maize and potato are nutrient exhausting crops, legume crops enhanced the soil fertility.

Learning leads to change

With enhanced knowledge gained through FFS, farmers of Tukucho village are now managing their apple orchards in a holistic way. While they are adopting IPM methods for pest control, they are



Well managed apple orchard intercropped with legumes

also planting pollinizer varieties for better fruit set. Farmers are also planning to introduce some bee hives in the orchards and protecting them by using safe pesticides. Also by including intercrops like legumes, they are ensuring that the soils are not depleted of their nutrients.

The success of FFS is spreading. Farmers who did not participate in the FFS too are learning from those who are now more knowledgeable.

Though organizing FFS programme for a period of one year was a challenge with limited availability of IPM tools, materials and resources, the programme did bring a lasting change in the farmers. Today, IPM is not just an agriculture practice but has become a way of farming in Tukucho village.

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Photo: SEARICE

Farmers do breeding of varieties during one of the sessions

Seeds and FFSs

SEARICE

The agrobiodiversity@knowledge programme initiated by Oxfam Novib and Hivos, aims at generating and sharing evidence and insights for transformation in the area of agricultural biodiversity. At the heart of the programme is a global knowledge and experience community of organisations working at various levels on this topic with millions of farmers worldwide. Farmers are the guardians of biodiversity. For resilience and risk-spreading, as well as to meet highly diverse consumer and market demands, they need to be able to have a choice from a wide variety of seeds. SEARICE has developed a methodology to enhance farmers' breeding and seed selection processes, working with individuals and organisations throughout South East Asia in order to upscale results.

For more than 30 years, the introduction of modern varieties as part of the Green Revolution, and the subsequent loss of agricultural biodiversity, has been a cause of concern for many people. Farmers have become more dependent on traders and external companies for their seeds. Fortunately, efforts like on-farm conservation is safeguarding the genetic characteristics that will otherwise would have disappeared, if farmers only planted modern varieties. These farmers are helping to increase the genetic diversity of crops available. By working with national and local partners, such as agricultural extension departments, agricultural research centres, academic institutions, civil society organisations and farming communities, SEARICE promotes community-based conservation and sustainable use of plant genetic resources in Bhutan, Thailand, Cambodia, Laos, Vietnam and the Philippines. A key element of its approach is organising and facilitating Farmer Field Schools.

Learning about seeds

FFS use a flexible training methodology based on farmers' priorities rather than a set curriculum brought in by the extension worker. Within the training programme, farmers share their perspectives on the varieties that they use, those that have been lost, and those that they want to plant. It is not uncommon to find farmers who, for example, like a specific variety of rice because it is aromatic,

Farmer Field Schools

Farmer Field Schools are a structured approach to facilitate experiential learning by farmers on their own fields. This approach was developed with rice farmers in Indonesia in the early 1990s, and is now widely used in a variety of contexts. While developed initially to teach farmers about integrated pest control to reduce pesticide use, it is equally suitable for many other agro-ecological farming strategies. In a FFS, farmers are trained to systematically observe their crop ecosystem from week to week and, based on their observations, to make informed decisions on how to act next. Extension agents act as facilitators, making FFS a more participatory learning method than regular extension. Through interactive learning and field experimentation, farmers learn problem-solving skills that make them less dependent on external information sources. Ideally FFS graduates increase knowledge within their communities by disseminating their findings with other farmers.

(Source: Learning AgriCultures, Module 7, ILEIA)

but who would prefer if it would also have a shorter production period. Our training programme aims to help farmers search for and develop different varieties based on their needs and preferences.

As part of the FFS curriculum, farmers get to experience the whole plant breeding cycle in the first season, using the basic components of plant breeding – varietal evaluation, seed rehabilitation, actual breeding or crossing and segregating line selection. After the first season, farmers decide which aspects they would like to focus on.

The varietal evaluation trial allows them to grow several varieties that meet their criteria on a demonstration plot, and then select and decide which of these varieties will work well for them in their locality. Another study field is line selection, where farmers select materials from promising or stable lines. In the third activity, seed purification, farmers learn to choose good seeds to restore a variety of which the purity and quality has deteriorated. Finally, the fourth training section involves farmers learning to do the breeding of new varieties themselves, either through selection from early generation seeds (segregating lines) or by actual crossing of selected parent materials.

At the end of the season, close to harvest time, we organise a Farmer Field Day: farmers from neighbouring communities come to learn about the different varieties that have been tested and which appear to have potential. This field day is a good time for choosing seeds for the next season – for participating farmers as well as their neighbours. The field day is a way of reporting back to the community, but also a good opportunity for lobbying and advocacy. Government officials and policy makers are usually invited so that they can find out about what the farmers have been doing and (hopefully) support them in the future. In some cases, local media are also invited for wider dissemination of the farmers' initiatives.

We want farmers to be able to control their own seeds. Research centres do line selection and breeding, of course, but they have their own ideas about the characteristics that a variety should have, and only ask farmers for their opinion when the selection process is complete. By involving farmers from the beginning of the breeding process, the whole process is based on their criteria and

Farmers select suitable varieties from several varieties grown on demonstration plot



Photo: SEARICE

needs, and the final product will be one that they really want. Our experience has shown that, even by the end of the first season, farmers are very eager to continue and have a clear idea on how they want to proceed.

Changing mindsets

SEARICE does not implement the FFS itself, but mobilises others to do so. Working with local and national institutions is a way of scaling up the project, ensuring that more farmers are involved, and more farmers benefit. We train local extension workers –mostly from the government, but also from interested civil society organisations and schools– to conduct the FFS. We introduce the principles of adult education and the steps that make up a Farmer Field School, the process of engaging farmers in a participatory process, and of course the technical aspects related to plant breeding and the conservation of a region’s plant genetic resources. Local governments can support the FFS by providing resources such as land or inputs. Research centres play an enormously important role in providing seeds for varietal selection or pre-breeding materials for segregating line selection or farmers’ breeding in the FFS.

Working with these institutions also helps us bring about a change in attitudes towards working more closely with farmers. Unfortunately, the dominant paradigm in these institutions is often to work top-down, seeking to impose institutional priorities on the farmers. As we partner with government agencies and other organisations, their perspectives change when they see results in the field. SEARICE provides support for at least three seasons, but we hope that by the end of the third season, there is enough interest and enthusiasm among the local partners or farmers themselves to continue without external support. At this time, SEARICE withdraws but continues to provide technical backstopping on an on-call basis.

As part of our policy work, we target universities and seek to influence mainstream agricultural education to include more participatory approaches. Actively engaging students in research in the communities helps farmers to record inputs or calculate the benefits from production. But it also changes the students’ mentality, encouraging them to be more engaged with farmers when they start working, rather than taking the top-down approach.

Changing extension

Sometimes, when extension workers apply the FFS approach for the first time, there is some hesitation because it is new for them. SEARICE prefers to work with those who are already familiar with FFS and support its principles, but also wants to bring about change among those who are doubtful. Usually, when extensionists start seeing the results from the FFS, their perspective changes. We keep providing the trainers with support in terms of technical

backstopping and reflection on their work. Every now and then a star pupil arises, who is more passionate than the others and who keeps pushing and initiating. For example, partners such as those in Pangasinan, the Philippines, have spread the programme to other areas and even developed a FFS for school children. SEARICE can only provide minimal resources, but some partners are willing and able to obtain resources from other places and take initiative themselves.

Initially, most people we work with believe that only those with a Ph.D., or those who work at an agricultural research centre, should be engaged in plant breeding. They think we are crazy to enhance farmers’ breeding skills in this way. But they change their minds when they see what farmers are capable of. This is why the Farmer Field Days are such an important and inspiring part of the process: they highlight what farmers have learnt and the potential they have for doing this kind of work. We have already developed a pool of farmer breeders, and they have done remarkable work. One farmer in the Philippines, Jerry Demon, breeds corn and claims he can surpass the production of GM corn.

This process does not only help others to realise what farmers are capable of, but also farmers themselves. Talking to farmers, it becomes clear how it has empowered them. In the northern Philippines, farmers have bred and now produce a variety of rice suitable for the rice cake industry, which used to buy rice from outside the province. One of the farmers approached the rice cake producers and challenged them: “*tell me what sort of variety you want, and I will be able to produce that.*” Another farmer told us that he was not too worried about crop failure in the face of natural disasters: “*I know even if my crops get destroyed by a calamity, I still have the knowledge to continue producing very good variety seeds, and that I will be able to pick up and recover.*”

Sharing knowledge

As part of the Agricultural Biodiversity Community we are all learning from each other. For instance, at SEARICE we are discussing which marketing elements are required to guarantee farmers’ rights and to continue to promote biodiversity. The community allow us to explore the solutions that other organisations have found. In a broader sense, international knowledge exchange helps us share our experiences and convince others to take a farmer-centred approach in the policy and practice of education.



Based in the Philippines, Southeast Asia Regional Initiatives for Community Empowerment (SEARICE), is a regional non-government organisation which promotes and implements community-based conservation, development and sustainable use of plant genetic resources. E-mail: searice@searice.org.ph

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In the northern Philippines, farmers have bred and produced a variety of rice suitable for the rice cake industry.

e-Arik Center

Using ICT for educating farmers

R Saravanan

The ICT based agricultural education has the potential of empowering farming communities by improving access to information and knowledge sharing. The Village Knowledge Centers in North East India is one such initiative which uses ICT as an educational tool.

The tribal farming communities of north-east region of India remain one of the most disadvantaged lot having little access to appropriate agricultural information. Limited technical manpower in the agricultural research and extension organisations is a perennial problem in North-East India. In 2008, the ratio of extension personnel to farmer in East Siang district was abysmally low at 1:4090. Further, lack of transport and communication facilities, limited financial support to the technology transfer, difficult terrain, mountainous periphery and frequent natural disasters, less infrastructure facility makes access to information very difficult. This lack of access to information is manifested in low agricultural productivity, particularly of rice, which is lowest (1.76 tons/ha) among the states of India.

A survey was conducted in selected villages during 2007, to understand the current situation and future needs of information exchange on agriculture. The results indicated that only four per cent of farmers had regular access to agricultural information. A majority of tribal farmers who were growing paddy, expressed a strong need for information on pest and disease management. The survey also looked into the access and use of communication tools by local communities. While very few farmers possessed cellular phones, none of them owned a computer nor was there internet facility in the surrounding three villages. Infact, more than half of the households had no power supply.

Considering disappointing agricultural education and extension scenario among the farmers, an ICT based initiative entitled e-Arik (e-Agriculture) was initiated during mid 2007. The first Village Knowledge Centre (VKC) was set up in Yagrung village in East Siang district of Arunachal Pradesh State.

e-Arik Village Knowledge Center

There is project team comprising of Research fellows and computer instructor, who serve as facilitators helping farmers use the VKC.



e-Arik Center at Sille village

Farmers need to register themselves to be able to use the services. Presently, 500 farmers from 12 remote tribal villages are registered under the e-Arik system. The project team helps farmers access ICT based information. They also help them in engaging in remote consultation with other agricultural experts. Both Central Agricultural University (CAU) and the Krishi Vigyan Kendra provide the technical support. While the CAU is responsible for the overall project implementation and to provide scientific advisory services to the farmers, the KVK has been organising trainings and demonstrations on the farm and carried out follow up activities. The Project Advisory Committee comprising of the project team, village tribal council members and farmers, regularly monitors, supervises and is responsible for quality control of project activities.

Information exchange

A lot of information sharing is being done through the e-Arik centers. The e-Arik project staff visit each farmer at least twice, every month. The project staff regularly visit the fields to observe crop conditions and to diagnose pests, diseases, nutrient deficiencies and physiological problems. They digitally document these issues using ICTs in the field and, via e-mail and web-cam, communicate them to staff at the e-Arik Research Laboratory at the Central Agricultural University. Locally educated young farmers are also trained in these activities and serve as farmer facilitators. Problems are analysed by the experts, who also visit the fields if required. The recommendations are passed on to the e-Arik village knowledge centre by e-mail. The concerned farmers are also informed by phone and personal face-to-face communication is carried out by the farmer-facilitators.



Farmers watching video on farming practices

The project team has taken up specific documentation for eg., digital documentation of pest and diseases, on crop history etc., which serves as a resource reference for all concerned. Dissemination of information is supplemented with farm advisory services for major crops (rice and khasi mandarin). Farm market and weather information, announcements on farm training programmes, information on governance, health, and education sectors, results of survey reports, newsletters and farmers training reports are published through the project web portal (www.earik.in). Some are also displayed on the notice boards at the e-Arik Center, besides information on computer education and general developmental and environmental awareness for the farmers and school children. Also farm multimedia shows, on-farm training and demonstrations are regularly organised by the e-Arik project staff. Good practices are disseminated through innovative approaches such as farmer-to-farmer communication and local self-help groups.

Impact

Farmers implemented a number of sustainable farm practices, such as vermi-compost, using leguminous crops for nitrogen fixation, bunds and ridges for water retention; stone contour bunds, agro-forestry, crop rotation, indigenous pest and disease management etc. However, when it came to the adoption of new methods of cultivation like the System of Rice Intensification, only two farmers had adopted in the year 2010. It may take few more years to convince more farmers to adopt, because it follows entirely different farm practice compared to their usual cultivation methods which were followed over the generations.

Another positive result was that many farmers moved away from shifting cultivation. Around 55% of farmers developed new Khasi mandarin orchards in their Jhum field, permanently moving away from the age old slash and burn agriculture to settled cultivation.

After three years of implementation, around 42% of e-Arik beneficiaries reported increased production of rice and 29% reported increase in Khasi mandarin crops. It was estimated that on an average, the income increased by Rs.1689 for Rice crop and

Rs. 5251 for Khasi Mandarin trees, among 500 e-Arik beneficiaries.

Besides improvements in farm, the e-Arik advisory services helped farmers save a lot of time and cost in accessing information. In comparison to the conventional extension services, farmers in this system saved around Rs.2400 per year on their travel cost.

Scaling-Up

Impact on agro-advisory services by using ICTs were assessed regularly and based on the findings project was refined and project activities were added to facilitate better information and knowledge access among the tribal farmers. A number of challenges had to be addressed before it was scaled up. For instance, the Adi dialect spoken by the tribal communities does not have a script. Hence, *Adi* dialect translation was used simultaneously along with English and Hindi languages for effective communication among the farmers. In the publications, the *Adi* dialect was communicated by English alphabets. Also, one of the biggest challenges the project had to face was the fluctuating electricity voltage and frequent power cuts. This was overcome by battery back-ups, universal power supply and using step-up inverters. During the failure of online connectivity, offline content is made available as a substitute.

Overcoming the limitations and based on the positive feedback and farmers interest, the e-Arik project concept was extended to the entire district by establishing 10 e-village centres in collaboration with the C-DAC, Hyderabad during 2008 and followed by e-Agri Kiosk project with the support of the NABARD in four villages for facilitating better agricultural extension education among the tribal farmers.

Lessons Learnt

Need based and farmer specific content is not readily available for dissemination. Along with modern technologies, local innovations and ITKs need to be suitably refined and then disseminated by the ICTs.

Facilitating information exchange alone will not result in desirable changes in adopting sustainable farm practices. Appropriate technologies need to be demonstrated and appropriate resources be made available based on field conditions.

Information and knowledge on farm practices along with other linkages - forward (farm machinery, manure, seeds) and backward (post-harvest technology and market) are essential in adopting farm practices. This is necessary to turn information into agricultural action.

For successful implementation of the ICT based extension education to farmers and also for its sustainability, integration of the other public agencies like the Department of Agriculture, Horticulture, Fisheries, Krishi Vigyan Kendras and private

Information and knowledge on farm practices along with other forward and backward linkages are essential in adopting farm practices.



School students and rural youth learn computers at the e-center

knowledge providers in the agriculture sector like NGOs, farm input dealers, agribusiness firms etc., is crucial.

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Acknowledgements

The author expresses gratitude to the DSIR (MoS&T, GoI), C-DAC, Hyderabad and NABARD for providing research grants to carryout e-Agriculture such as e-Arik, e-Village and e-AgriKiosk initiatives, respectively in Arunachal Pradesh state of North-East India. Author is also thankful to the farmers, research team members and staff of the Central Agricultural University and other agricultural stakeholders who facilitated successful implementation of the e-Agriculture projects.

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Farmer facilitator recording field situation using a mobile phone



“We are working to propel change”

Interview: Laura Eggens

Having grown up and studied in the enormous city of Mumbai, India, Meenakshi Singh and Umesh Chandrasekhar were looking for an alternative way of life. After spending eight years farming organically in the district of Dharmapuri, in the southern Indian state of Tamil Nadu, they decided to work with local farmers to help them convert to organic agriculture – through their children. They started the Puvudham Learning Centre, a school for children of nearby farmers and migrant labourers that aims to make the experiences at school relevant to children’s lives and to give value to the children’s own knowledge. Starting with seven children in 2000, 95 are now enrolled in their school.



Photo: R. Senthil

Meenakshi Singh

While food can be seen as our most precious possession, farming and the production of food is seen as a last option, carried out by those considered incapable of anything else. Education plays a key role in forming this attitude, both among consumers and farmers themselves. “Interventions in rural areas such as our school may be able to make future generations see things in a better perspective. It can teach them that farming can be an educated option for those who decide to stay in the village in spite of the glamour of the city.”

Meenakshi wanted to give children in the school the freedom to move, enquire and learn. In contrast to conventional schools, she aims to sharpen and encourage the “inherent sensitivity” and intuition of the child. “Sensitivity creates space for creativity and self-discovery”, Meenakshi says. She talks about sensitivity to animals, plants and nature. In contrast, in conventional schools learning has become fragmented into different subjects, and removed from life itself. Puvudham Learning Centre integrates life and learning, to help children synthesise the knowledge they gain in and outside school. Focusing on “experiential learning”, school activities include drawing, discussions, walks, observations and

questions. In groups, children plan how to grow plants on an empty plot, learn about natural pest control, measure their progress, and learn to make a cost-benefit analysis. Children are encouraged to speak about what they already know, and the teacher helps them build on their existing knowledge.

Why was it necessary to start this school?

To be frank, the decision to start the school came from my own need to reach out to children. I wanted to allow at least some of them the freedom and happiness I would have appreciated in my school. You see, during my own school years in Mumbai I was unable to understand why I had to go to school at all when I could learn so much more outside the formal educational system. I remember an incident in primary school, when I was wrongly accused of stealing and the teacher did not think it necessary to apologise to me, making me feel worthless. Occurrences like these, in the same way as the existing examination system, made me start questioning whether the school existed to turn me into a good person or only into someone who fitted someone else’s ideal. School distanced me from my mother because she was not able to

share what I learned and I was not able to explain it in the language she knew.

Yet education is more than a transfer of knowledge to children and young adults. It plays a key role in personality development and self-esteem. It can give you a very warped picture of yourself and the world. Unfortunately, the schooling system in India, and probably in much of the world, is designed to make children remember exactly what they have been told, giving very little thought to the social and psychological effects. The individual is given too much attention while the wholeness of the human consciousness and consideration for others is hardly touched upon. Often in the rural areas, education tends to disregard local resources and the pride of the local people. The farmers' children experience the same kind of disjointedness with their families as I did with my mother. They do not belong to the village any more. They can see themselves only as future technicians or labourers living in cities and towns. This is facilitated by the media showing the city as a better place for opportunities and good life.

What do you hope to achieve?

It is very difficult for anybody to survive completely on farming at present. We hope that by getting the kind of education we are trying to give, young farmers can engage in activities alongside farming and not have to sell their lands and move to the city completely. Farmers can find ways to pool their efforts together without the assistance of outside forces. They can make more calculated decisions that may help them to stay out of debt and become prosperous.

In practice, what effect does this have on students' lives?

Our first batch of students has just graduated, so we cannot say much about how their future lives will be affected. We must also keep in mind that many other factors are at play and will determine whether young people can stay in rural areas, such as the family's wishes and needs. Some of our graduates, for example, are goaded into the city by family debts or the lack of land, working in construction to be able to repay family loans. Nonetheless, we find it gratifying that these children have not been spoiled by a system that forces them to think that white collar jobs are the only ones worth doing. They experience dignity in their labour, whatever it may entail. They respect and care for their families. They cooperate with family decisions and want to keep alive the traditions of farming and living as a family.

And what do the children's parents think?

Parents of the children in our school have not been resistant to the school's curriculum, since from the beginning it has included "regular" subjects such as language, science and maths. These standard subjects are part of the school as well, although we don't teach them as separate subjects but combine them as a whole learning experience up until the 6th grade. Thereafter, standardised text books help the children bridge gaps to enrol in government schools after the 8th grade, the last year they spend in our school. Parents see that their children are helpful on the farm and read and write English. In a later stage, when it comes to choosing livelihoods, I think that, deep down, parents also know that farming is a noble occupation.

Interacting with the school children



Photo: R. Senthil

Do children influence their parents?

We tried working with the parents through a farmers' group, but other natural and economic forces made this difficult. But we have seen that working with children helps them have a more pragmatic view of their family situation and their society. It helps the children take on the challenges of farming along with their families. In some cases, students are convincing their parents of the harmful effects of pesticides and are persuading them to do part of their farming organically.

Who are the teachers at the school?

Currently, we have five teachers looking after 95 children. The teachers are local young people who have taken a two-year teacher training course after 12th grade. Initially, they were not confident in English or in other subjects. They were invited to observe classes for about a month, give feedback and ask questions. I personally tutored them in specific subjects. They are given the basic framework to teach, and then they are given a lot of freedom to experiment and develop their own ways of dealing with difficult and challenged students. Our curriculum was prepared bilingually to facilitate the teachers' understanding of the concepts. It is also delivered to the children in both English and Tamil because we believe that a child learns concepts best in their mother tongue. This also facilitates sharing of their learning with their parents back home. The English terminology and the writing skills are developed alongside.

You are part of a network of alternative schools...

Yes, we are part of two networks: a conservation network and an education network. Both of these are informal groups of individuals who are doing their best to make a difference in their world and share their experiences with each other in an informal way. It is a great advantage to meet people from diverse backgrounds. I often feel inspired by their lives and experiences. It is heartening to know that there are others like oneself who are doing as crazy or crazier things with their lives. We have copied ideas from other schools we have visited and seen, and some of our ideas may have been picked up by others. The *Vikasana* school in Bangalore, for example, has been a great source of learning for us about how to teach language, and attending workshops by the Rudolf Steiner group of schools has influenced our attitude towards art. We are open to sharing and have occasionally provided teacher training opportunities for other schools that heard about our work, both through the networks and beyond.

How can policies or politicians help?

I believe that policies can do little without people becoming change agents themselves. Our school aims to influence individuals to come forth and build a community of people who are concerned about the environment and about social and cultural values. We are working to develop a collective conscience and thereby propel change in individuals. Perhaps teaching people about the value of agriculture will help them see, for instance, the skewed ways in which different products are valued. The price of a kilo of rice

will be negotiated for a bargain, while the price of a litre of Coca Cola is non-negotiable. We are demeaning the value of healthy food, while junk food is promoted at a fixed price. Education may shed light on many such reasons for the continual poverty of the farmer.

To encourage initiatives that build an alternative way of looking at the world, governments must give these types of schools special consideration and support their initiatives. Rather than forcing us to continuously go through approval procedures, it would be much more beneficial if the authorities would make it a point of regularly visiting schools like ours to see if we are following our own principle and statutes with sincerity. Our approach makes us very different from private schools!

Can your approach to education be scaled up?

Personally, I am very much influenced by Schumacher's idea that "small is beautiful". I guess our kind of school has to be a small personal initiative to be successful. But there could be many small personal initiatives of this kind, since there are many young people interested in education in rural areas. The problem is that it is becoming more and more difficult for children to go to a small school in a world where education has become a big business. It is almost an industry in our country now – a robot industry of sorts where they try to smooth out the differences in individuals and mass produce people that think similarly and act in ways that they consider proper.

In the light of this loss of human intelligence and its shameful subjugation to random acts of memory, it becomes imperative to have many more small individual schools that strive to work to help the human intelligence to blossom, and the individual to be a harmonious part of a community.





Growing organically

Enhancing knowledge through cultural exchange

Harish Tewari and Poonam Tewari

To impart organic farming education to the new generation that heavily relies on chemical farming, WWOOF INDIA is making an attempt to link young professionals across the world with the organic farms in India. Through its various programmes, WWOOF is not only helping farmers adopt organic farming practices, it is providing hands on experience on farming and organic production for the students, also facilitating cultural exchange among various countries.

Increasing consciousness about conservation of environment as well as of health hazards caused by agrochemicals has brought a major shift in consumer preference towards food quality. Global consumers are increasingly looking forward to organic food that is considered safe and hazard-free. The demand for organic food is steadily increasing both in developed and developing countries, with annual average growth rate of 20–25%.

India has a lot of scope for organic farming. Organic farming has been an integral part of Indian farming practices. India is bestowed with considerable potential for organic farming due to prevailing trend of integrated farming systems of crops and live stocks, high bio-diversity on account of diverse agro-climatic conditions and large number of small and marginal farmers. Besides, inherited tradition of low input agriculture in many parts of the country, particularly in hilly and rain-fed areas too, is an added advantage and augurs well for the farmers to shift to organic farming and tap the steadily growing domestic as well as overseas markets. Imparting organic farming education to the new generation that heavily relies on chemical farming is the need of the hour.

Genesis of WWOOF India

In India chemical farming methods have dominated for so long that there is very little useful information available on non-chemical



Volunteers learn organic farming working on host farms.

or organic farming methods and few qualified specialists capable of providing the needed know how. Conventional agriculture extension system promotes mainly conventional agricultural techniques and knowledge. In most situations, all government policies still promote the use of chemicals in agriculture very effectively, but do not promote the techniques of organic farming.

Established in 2007, Worldwide Opportunities On Organic Farms India (WWOOF INDIA) is working towards filling this gap by providing technical support to farmers interested in starting Organic Farming. In the above context WWOOF INDIA is gradually involving more and more organic farmers into WWOOF India network. From just 14 organic farms in 2007 it has now more than 180 organic hosts farms (including many NGOs) under its network. The WWOOF India Network has now spread across 16 states in India.

The objective of WWOOF is to help farmers adopt organic farming practices, to provide hands on experience on farming and organic production for the students and facilitate cultural exchange among various countries. Main purpose of WWOOF India is to create an interest and understanding for organic and biodynamic ways of living. It does this by producing a list of suitable destinations and making this list available to world wide volunteers, also known as 'WWOOFers', thus encouraging people to travel to other countries and increase their knowledge and understanding of other cultures, people and ways of life. It operates on the basis of exchange, boarding and lodging for help, and so allows its members to accomplish this as economically as possible.

To support the continued growth of organic farming practices and volunteer networks, WWOOF set up 4 WWOOF Global Villages (WGV) in India which are envisioned to become research centers

More than 2000 volunteers and 15 Interns from various Universities of EU and USA have been trained in organic farming, over the past 5 years.



A volunteer helping the host farmer in land preparation.

on organic farming. The first WGV has been set up on 4.5 acres of land in the village of Surajpura, Madhya Pradesh. It is near the world famous Khajuraho temples and adjacent to the Ken River and Panna Tiger Reserve.

Farm Education Programmes

There are basically two ways of getting involved for learning organic farming – Volunteering and Internships – either on host farms or in the WWOOF Global Village.

Volunteering

Volunteering is done either on host farms or in WWOOF Global Village. These volunteers come from various countries across the world. These volunteers are mainly youth who are interested in green living and sustainable agriculture practices. The volunteers learn local organic farming procedures and issues while helping in farming.

These volunteers are trained on host organic farms which provide them an opportunity to live and learn on farm. The host farms grow food organically, live sustainably and generally try to live a low impact life. They share knowledge and experience of organic

growing, producing organic products and/or experience in more ecological and sustainable methods of living. They provide healthy meals and a safe, clean place to stay. The volunteers help on the farm for 4-6 hours per day and thereby benefit by 'hands-on' learning.

The Internship Programme

The WWOOF India internship program has been created with the goal of providing a stimulating environment and professional and academic resource network for students interested in research-based activities in organic farming, sustainability and environmental issues. Interns are mostly final year students from various Universities of different countries.

WWOOF India internships are project-based and are undertaken by either individuals or groups. Longer 12 week internships are better suited to those wishing to research, plan and implement their own projects, while the 4 and 8 week intern options work better for those who are prepared to research and implement a project suggested by WWOOF India advisors.

Internships comprise of three phases. Phase I focuses on Conceptual Understanding and Orientation. The internship begins at home; by learning about the internship process and the values and guiding principles of WWOOF India and host farmers, interns establish a meaningful and fruitful connection between themselves and WWOOF India hosts. The projects are identified during this period. During Phase II, the student's time is reserved for more specific research as the project gains definition. Mid-term reviews are done which provide an opportunity for feedback and constructive criticism. A final presentation of the project proposal define the end of research and the start of action.



Interns implement their projects on host farms.

In the Phase III, the interns actually implement their projects on host farms. Some interns are also placed in WWOOF Global village for learning. Rural farmers of the adjoining villages along with volunteers and interns have been involved in various activities like growing nurseries using organic methods, construction of check dams, construction of shaded beds for nurseries, construction composting units etc.

By the end of the internship period, interns are expected to deliver a completed project based on the conceptual, practical and research-based curriculum evolved during the three phases. Documentation of the project from the initial to the final phases is also required for the benefit of the intern and the program overall. Upon internship project completion, WWOOF India provides a certificate highlighting what was learned and accomplished.

Call for Articles

Strengthening family farming

Vol. 15 No. 4, December 2013

The United Nations declared 2014 as the International Year of Family Farming. This is a very important recognition of the multiple social, economic, environmental and cultural functions of family farming. For example, family farmers produce more than 50% of the world's food, and are important guardians of biodiversity.

Creating the conditions for family farming to thrive is essential for a sustainable future. The threats to family farming are multidimensional. Climate change, land grabbing, land degradation, the aggressive promotion of industrial farming and dependence on large agribusiness chains are some of the most pressing challenges. But family farmers have proven to be innovative and resilient under the right socio-political framework and conditions – especially when supported by public and institutional policies.

Family farmers exert a large degree of autonomy. They do this through the use of agro-ecological practices and the creation of new markets

that are suitable to their context. They pool their labour and resources, and increase their yields. They organise themselves and make their voices heard. They build their own educational spaces where they learn from each other and teach others. Women play a key role in these strategies, which are often carried out in close collaboration with local decision makers, researchers, and consumer platforms.

For the December 2013 issue, *LEISA India* is looking for the most groundbreaking experiences and visionary ideas on how to strengthen family farming. What are family farmers and their organisations doing to advocate for and enhance their rights and livelihoods? How are governments incorporating agro-ecology into their public policies? What other support mechanisms are needed to promote sustainable family farming? How can agro-ecological family farming become an attractive proposition for future generations? What can we learn from existing and emerging practices?

Please send us your contributions. Articles for the December issue of LEISA India should be sent to the Editor, before 31st October, 2013. E-mail: leisaindia@yahoo.co.in

The journey till now

The number of volunteers and interns coming to join WWOOF India is increasing each passing year. Their knowledge on organic methods/practices has increased. For example, they are now more aware of practices like crop rotation, resistant varieties, composting, mixed cropping, no tillage crop production and pest prevention, green manuring, mulching, nutrient cycles, resource recycling etc. They have designed and implemented a pest management system where observation, prevention and monitoring are the main components. Important requirements for careful organic processing have been understood. They discussed issues of contamination with non organic substances, non organic products. They also now, understand the structures of potential markets of various organic products produced and marketed by WWOOF India host farmers. They have learnt to differentiate marketing channels (direct marketing, farmers markets, specialised shops, retailers etc.) and to characterise them. They also had opportunity to analyse the certification process and understand the different issues to consider when developing an export marketing strategy.

WWOOF India has helped many farmers to convert towards organic farming by linking volunteers to their farms. More than

50 new organic host farms under its network across the country were started through this process. In the next 5 years, WWOOF India plans to include 1000 organic farms for placing more than 5000 volunteers and 200 interns in various projects and learn.

By bringing together hosts and volunteers, WWOOF has been building bridges where people help each other to share more sustainable ways of living and make a healthier world. In the process, a lot of cultural exchange is also taking place.

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The School of Biodynamic Farming

The practice school

Retaining youth in farming sector

D Thangapandian

Finding agriculture unremunerative, a number of youth are seeking livelihood opportunities outside agriculture. To address this issue, The School of Biodynamic Farming has initiated a two-year course for training rural youth in making agriculture sustainable as well as profitable.

Indian agriculture has been continuously facing serious problems, majority of which are manmade. Coupled with adoption of inappropriate technologies and methods, farming has ceased to be a remunerative livelihood. With continuous degradation in living standards of the rural population, most of the village people have started moving towards urban areas. A latest

census indicates that Tamil Nadu is one of the worst hit states where in more than 50% of the total population is living in the urban areas. So, where are we going? Are we going to shift IT companies and manufacturing sector units to Kovilpatti and Usilampatties? Then who will feed the entire state? These are alarming questions which need to be addressed.

What we urgently need is a motivated and trained young team from villages to take up the new challenges of undertaking agriculture as their profession. But we need to train them not only in sustainable agriculture but also in modern technologies to enable them to carryout farming as an economically viable enterprise. In this effort, we from Inba Seva Sangam, a Gandhian principled organization from Karur district of Tamil Nadu started a school to teach biodynamic agriculture to poor rural students to become trained agriculturists in coming years. These students are expected to not only take up organic or biodynamic agriculture as their livelihood, but also be the part of the “Healing the Earth Campaign” team.



The school premises

The School of Biodynamic Farming was started on 11 July 2012 at Vinobajipuram, in Karur District of Tamil Nadu. The course is a two-year residential diploma program offered free, supported by Inba Seva Sangam. Presently, the first batch of 7 students (called as BD 7) is in the second year of their course. All these seven students are from nearby villages and basically belong to farming community and are from very poor family background. This first batch will graduate from the school in June 2014.

The students are being trained in all the components of Biodynamic Agriculture through 'learning by doing' methods. The focus is more on practicals rather than theory alone. The curriculum is divided into three - technical skill training; soft skill training and practice school. In the technical skill training, students learn about agro forestry, watershed management, irrigation management, farm equipment maintenance, biodynamic farming, soil fertility aspects, agronomy, horticulture, seed technology, certification and marketing. Communication skills, life coping skills, basic computer application, arts and culture are the subjects that students learn under soft skill development.

At the end of every term (6 terms of 3 months each), students will attend a 3-4 week practical training at renowned organic or biodynamic farms. During these practical school days, focus is on all major biodynamic practices such as preparation and application of biodynamic preparations, biodynamic compost and biodynamic liquid manure. Students will also get trained in the use and maintenance of the farm equipments such as tillers, weeders, sprayers and shredders. The present batch of students have visited organic and biodynamic farms, such as, Vindara Farms Auroville, Kurinji Biodynamic farm and Waldorf School Kodaikkandal. They have also been trained on the *Alternate Analytical Testing of Micronutrients for Soil Analysis* organized by MCRC, Chennai. They have also participated in the biodynamic trainings at Shenbaganur, organized by Biodynamic Association of India.

The programme aims at training the youngsters not only in farming technologies but also shaping them into disciplined and dedicated rural citizens.



Students learning to construct water conservation structure

During the second year, these students will have some basic exposure in certification and marketing which will help them to manage their own farms in future.

Our plan is to generate more than 1000 youngsters, both male and female, in the next ten years, who will be the messiahs in our mission of "Healing the Earth Campaign". The aim of this programme is training the youngsters not only in farming technologies but also shaping them to be disciplined and lead a dedicated life style. We strongly believe that collective initiatives like this will bring some positive changes in the society.

D Thangapandian is a member of the academic committee of The School of Biodynamic Farming and The Lead Worker of Farm India – www.farmindia.org

For more information, contact Mr. Jayakaran, Director, The School of Biodynamic Farming, Vinobajipuram, Karur District, Tamil Nadu. <http://www.inbasevasangam.org>

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Plant Health Clinics

Linking farmers with scientific knowledge

Tithe Farhana

Plant health clinics is a unique initiative tried by the Bangladesh Rice Research Institute and the Department of Agricultural Extension to link the coastal farmers with the scientific knowledge. With farmers realizing benefits from this service, there is a growing demand for the services of plant health clinics.

The agro ecology of the southwest coastal region of Bangladesh is very fragile, besides being affected by climate change. Within the last ten years, many farmers in Satkhira district have been displaced from agricultural land and crops because of increased salinity.

In 2007, the rice crop failed significantly due to erratic weather – a long duration of fog and cold, and incidence of pests and weeds. Therefore, for farmers in Satkhira, climate change is not a future possibility. It is a current livelihood threatening reality.

In 2007, Shushilan, an NGO launched its plant clinic project having piloted earlier climate resilient agricultural practices, such as, the use of saline tolerant rice varieties. However, a fuller agriculture extension support was required to meet the needs of farmers in the entire district.

The objectives of the project was to categorize causes and provide solutions to common agricultural problems, such as saline tolerant rice varieties and to improve agricultural productivity in general, through appropriate practices.

A woman plant doctor discussing with farmers



Farmer interacting with a scientist over mobile phone

The plant health clinics

The plant health clinics were set up by Shushilan, with the support of Bangladesh Rice Research Institute and the Department of Agricultural Extension. The clinic is equipped with computers, webcams, digital cameras and a digital microscope. The two plant doctors at Shushilan, help the coastal farmers with as much support as they can in terms of education, diagnosis and prescription. They also connect with the scientists when a need arises.

The primary investment to establish the two plant health clinics was around US\$6,000. In addition, there is a recurrent cost which amounts to US\$1500 per month covering the two plant doctors' salaries, house rentals, transportation, and fuel and utility bills (including internet connectivity charges). It was planned that the farmers would pay for the services being provided e.g. around US\$0.10 for service provided via a mobile or the Internet. However, given the low level of community awareness about ICTs and the need to demonstrate the value of the plant clinic service, it was decided to offer it for free, initially.

Use and impact

The farmers do seem to perceive a value from the service, with group discussions showing that farmers rated positively both the suggestions they have been receiving via the ICT system (such as

Between 2007-11, crop productivity, crop diversification and crop intensification has increased, and plant clinics are partial contributors to this growth.



Plant doctor interacting with a scientist through internet

suggestions about tests to be conducted on their crops? about planting saline tolerant crops? about cultivating different crops such as maize or sunflower), and the prescriptions they have received (i.e. specific guidance on fertilisers or pesticides: which to choose and how much, when and where to apply them.

The plant doctors themselves were able to report project benefits. For example, one of them was asked to identify a new and unknown disease in part of an eggplant crop. He uploaded digital images and sent them to the Global Plant Clinic (GPC). The disease was diagnosed as *Tulshipora* (the local name), which was correlated with the warmer temperatures that area had been experiencing.

During 2011-12, the local office of the Department of Agricultural Extension reported that for Kaligonj subdistrict, the prescriptive

information about treatment of pests and diseases has helped. It was estimated that the loss of production due to these causes had been reduced by at least 20% between 2007 and 2011. Over the same period, crop productivity has also increased with the yield gap (the gap between the actual and the potential output level of crops per hectare) being reduced in 80% of cases. There has also been greater diversification of the crops planted (e.g. use of saline tolerant rice and planting of maize and sunflower), and an increase in crop intensification (the average number of crops planted per year) from 1 to 1.28.

Farmers reported positively on the value of suggestions and prescriptions received from the plant clinic. Farmers appreciated the fast, good quality information and advice which the plant clinic could deliver? particularly relating to pests/disease, new crop varieties, fertilizer/pesticide dosage, and early warning information.

Certainly demand for the plant clinic's services has been continuously growing. With farmers realizing benefits from this service, it is anticipated that in future, farmers will be willing to make a small payment for the plant clinic services.



Tithe Farhana

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Call for Articles

Agricultural biodiversity: Breaking the barriers

Vol. 16 No. 1, March 2014

Agricultural biodiversity plays a huge role in maintaining resilient local economies, balanced diets and balanced ecosystems. The rapid disappearance of agricultural biodiversity and the lack of measures to protect it are therefore great causes of concern. Mainstream agricultural policies, which generally promote monoculture agriculture, Genetically Modified Organisms (GMOs) and Intellectual Property Rights threaten such agricultural biodiversity, having an impact on agricultural landscapes, species, varieties, breeds, the wild relatives of crops and livestock, pollinators, micro-organisms and genes. These policies and practices lead to the disappearance of plant and animal species, and the knowledge embedded in their management and use.

There is some good news though: in recent years many promising initiatives have been launched around the world that aim to preserve and manage agricultural biodiversity. Small-scale family farmers often play a central role in these, acting as custodians of biodiversity. But other actors and institutions also play important roles. Producers, public and private institutions and consumers are reconnecting with each other through innovative market arrangements, many of them

at local or regional level. Farmers and researchers are taking up joint research initiatives, and farmers' organisations are engaging in dialogues with policymakers, pushing for policies that enhance agrobiodiversity.

The March 2014 issue of *LEISA India* will look at these emerging initiatives and at the insights gained from the efforts to up-scale these experiences. We particularly aim to explore the factors that influence the transformation towards more sustainable and diverse production systems, and the factors that help break existing barriers: why have some experiences been more successfully spread and scaled up? The topics we will look at will include the revitalization of local seed systems and indigenous livestock breeds at a large scale; the market mechanisms and policies that support agrobiodiversity; farmers' innovations and the role of knowledge and information networks. As 2014 will be the *International Year of Family Farming*, this edition will explore the close interconnection between agricultural biodiversity and family farming.

Articles for the March 2014 issue of LEISA India should be sent to the Editor, before December 31st, 2013.

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ZIMSOFF and the Shashe Agro-Ecology School

Nelson Mudzingwa

While it is now widely acknowledged that a smallholder based, agro-ecological food production system is the best way to eradicate hunger and to reduce the impact of agriculture on climate change, less attention is given to the role farmers play in sharing the lessons they have learnt. All over the world, farmers and their organisations are not only working to strengthen their production systems, but are also working hard to engage other farmers. Building on a farmer-to-farmer approach, the Zimbabwe Organic Smallholder Farmers Forum (ZIMSOFF) is interested in training community facilitators and trainers, helping them develop a horizontal and participatory learning system.

A member of the Eastern and Southern Africa Smallholder Farmers' Forum (ESAFF) and of La Via Campesina, ZIMSOFF was founded in 2002 during the World Summit on Sustainable Development held in Johannesburg, South Africa. ZIMSOFF is an organisation of small-scale farmers, in which all the positions of responsibility are held by farmers. Its vision is to improve the livelihoods of small-scale farmers and empower them to defend their rights. A total of 19,000 families are currently its members, organised in four regional clusters, covering the whole country except the regions of Harare and Bulawayo. Households in each region are organised as a group; a number of these form a Smallholder Farmers Organisation (SFO), and several SFOs form a cluster.

During the past ten years, and with the support of the PELUM network (Participatory Ecological Land Use Management), we have been building and implementing basic training infrastructure and facilities in these four clusters. Members have organised and held farmer-to-farmer "look and learn" visits, group meetings and workshops, together with seed fairs and other exchange meetings. These gatherings have been an important way of exchanging knowledge and information.

Farmer to farmer, community to community

One of the SFOs in the central cluster is the Shashe Endogenous Development Organisation. Based at the Masvingo Rural District



The school promotes community based horizontal learning system

Council, this group started working together in 2000 as an agro-ecological community where members of other communities could visit, spend a few days, and learn from the practices of the local farmers – especially focusing on seeds, soil and water conservation, integrated livestock management, and local efforts to link producers and consumers. Shashe was formed by formerly landless peasants who engaged in a two-year land occupation before being awarded the land by the government's land reform programme. As in the other clusters, the Shashe Endogenous Development Organisation is particularly interested in training other farmers and enhancing a community-based and horizontal learning system. Hundreds of families are "connected", sharing the knowledge gained from their own experience.

The first meeting of agro-ecology trainers in Africa, organised by La Via Campesina and held at Shashe in June 2011, proposed the development of a training mechanism for "peasant activists and promoters". Since then, the aim has been to train future trainers (as promoters or facilitators) for a farmer-to-farmer programme.

The smallholder farmer plots are being turned into "centers of excellence" on agro-ecology and sustainable agriculture.

Funding was secured from the New Field Foundation to develop an agro-ecological school, following a similar approach to those already seen in Mozambique, Mali and Niger. Specially targeting young people and women, the Shashe Agro-Ecology School invites farmers from the local community to complete a training course on agroecology and sustainable agriculture, integrated land use design and participatory methodologies. The training follows a syllabus designed by PELUM, building on the “Learning Agricultures” modules prepared by ILEIA, and focusing in particular on those practices that are more resilient to severe climate events (droughts, storms, floods, etc.), more adaptive to a warming climate (genetically diverse seeds, shade trees, mulch and cover crops, water harvesting and conservation, etc.) and which keep carbon in the soil (i.e. the incorporation of organic matter into the soil). Our overall objective is to add value to or strengthen the existing farmer-led processes with a local team of community facilitators or promoters who act as catalysts. Their role is to showcase those practices that lead to seed and food sovereignty and, working closely with the local government extension officers, to try to influence policy makers. It is envisaged that the school will train several hundreds of such catalysts in any given year.

Methods and lessons

Our objective is to work with all farmers, and together develop the knowledge and skills that will allow them to remain in their communities and work towards their transformation. The school aims to be registered with the Ministry of Higher Tertiary Education, to be recognised with a National Foundation Certificate,

and to link itself to the Great Zimbabwe University, thus providing space for university students. The current lecturers are farmers living close to the school who have been selected by the community because of their skills and expertise. The smallholder farmer plots are being turned into “centres of excellence” on agro-ecology and sustainable agriculture.

Our experience is showing that the most successful tool for promoting farmer innovation is a community-facilitated farmer-to-farmer methodology. This horizontal communication process leads to sharing and learning between innovators (those who have developed solutions to common problems) and their peers. Farmers are more likely to believe and emulate a fellow farmer who is successfully trying a new approach on his or her own farm than to take the word of an agronomist of possibly urban origin. This, even more so, when they can visit the farm of their peer and see with their own eyes the difficulties faced, the steps taken and the results achieved.

Many answers lie in farmers’ fields and knowledge. The Shashe Agro-Ecology School is showing the benefits of farmers playing a key role in the process of sharing these lessons.



Nelson Mudzingwa is the ZIMSOF National Coordinator. He is a practitioner on integrated and ecological agriculture, producing crops and livestock. His plot is one of the “centres of excellence” within the Shashe Agro-Ecology School.
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Community facilitators are trained to strengthen the farmer led processes





Educating youth on alternatives

The need of the hour

Indian farmers are at the cross roads. Every year their problems are compounding owing to several reasons - degradation of natural resources like land, water, forests, climatic changes; vast variation in annual seasons; liberalized global trade policies etc. In India, the youth are no longer inclined to stay in rural areas and pursue farming. Thus, it is high time to train them in all aspects of farming like cultivation practices, alternatives for plant nutrition and crop protection, post harvest, value addition and marketing of agricultural produce, to make farming more remunerative.

Recently, I had a chance of training farmers on preparing their own inputs for crop production at a very economical cost. To improve the beneficial microbial population in degraded soils with the use of I.M.D (Indigenous Micro Organisms), all that one needs is 200 grams of steamed rice filled in coconut shells and covered with tissue paper with a thread or rubber band and buried under a tree with a conducive moisture for 75 to 85 hours. By this time white fungus grows all over the rice. This rice with the fungus is collected into a clean vessel without any moisture and mixed with equal amount of granulated jaggery and filled into a glass or porcelain bottle with a lid and kept in a cool dry place for 6 days. This I.M.O-2 with numerous beneficial organisms can be sprayed on crops and also soil at 2 ml in 1 liter of water. This spray can be used for 60 days from the time of its preparation. This spray helps in inoculating billions of micro organisms which help in improving soil health and resulting in healthy crop production.

Similarly, raw fish cut into 2 sq. cm. size mixed with equal amount of granulated jaggery for 12 days in glass or plastic container will release thick syrup free of any bad odour. This can be sprayed with water in the ratio of 4 ml per liter of water, (Spray every weak 5-6 times during vegetative growth). This spray provides nitrogen. To provide calcium and phosphorous, granulate 1 kilo of carbonized bone in 20 liters of water for 20 days and spray this tea mixed with 2 ml with 1 liter of water during flowering period, every 4 days. Similarly, tea prepared with 1 kilo of tobacco stems broken to 2 mm thickness and soaked in 20 liters of water for 20 days at the proportion of 2 ml in 1 liter of water provides enough potash during fruit formation and grain filling.

As a remedy against fungal damages for any crop, we can prepare paste with 1 kilo jaggery pounded together and fermented for 10 days kept in a cool and dry place in a suitable glass or plastic

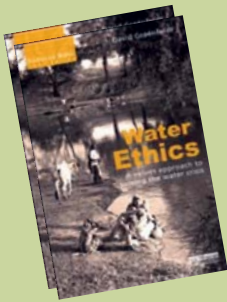
container. Similarly, we can ferment 1 kilo ginger and 1 kilo jaggery pounded and together fermented for 10 days, kept in cool and dry place in a suitable glass or plastic container. Use one of these pastes mixed at 3 grams in 1 liter of water to check fungal attacks on any crop throughout the crop period alternatively every 10 days. We can prepare growth promoters by fermenting 1 kilo of banana shoot before the formation of leaf cut into small pieces and fermented for 10 days. Mixed with 1 kilo granulated jaggery, it can be sprayed at 2 ml with 1 liter of water, throughout the crop growth period.

There are lots of alternatives, which are not only eco-friendly but also inexpensive. We have to educate young farmers about such economic alternatives for promoting sustainable and healthy crops and make agriculture a profitable occupation.

Shri Narayana Reddy is a legendary organic farmer and is one of the most sought after resource persons on ecological agriculture.

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Water Ethics A Values Approach to Solving the Water Crisis

David Groenfeldt, 2013, *Routledge*, 216 p, Paperback: £24.99, ISBN-978-0-415-62645-3

This book introduces the idea that ethics are an intrinsic dimension of any water policy, program, or practice, and that understanding what ethics are being acted out in water policies is fundamental to an understanding of water resource management. Thus in controversies or conflicts over water resource allocation and use, an examination of ethics can help clarify the positions of conflicting parties as preparation for constructive negotiations.

The book shows how new technologies, such as drip irrigation, or governance structures, such as river basin organizations are neither “good” nor “bad” in their own right, but can serve a range of interests which are guided by ethics. A new ethic of coexistence and synergies with nature is possible, but ultimately depends not on science, law, or finances but on the values we choose to adopt. The book includes a wide range of case studies from countries including Australia, India, Philippines, South Africa and USA. These cover various contexts including water for agriculture, urban, domestic and industrial use, the rights of indigenous people and river, watershed and ecosystem management.

Human Development Report 2013 The Rise of the South: Human Progress in a Diverse World

United Nations Development Programme, 2013, *UNDP, UN Plaza, New York, NY 10017, USA*, ISBN 978-92-1-126340-4

The 21st century is witnessing a profound shift in global dynamics, driven by the fast-rising new powers of the developing world. Besides China, India and Brazil, developing countries like Indonesia, Mexico, South Africa, Thailand, Turkey and others are becoming leading actors on the world stage. The 2013 Human Development Report identifies more than 40 developing countries that have done better than expected in human development in recent decades, with their progress accelerating markedly over the past 10 years.

The 2013 Human Development Report analyses the causes and consequences of the continuing “Rise of the South” and identifies policies rooted in this new reality that could promote greater progress throughout the world for decades to come. The Report calls for far better representation of the South in global governance systems and points to potential new sources of financing within the South for essential public goods. With fresh analytical insights and clear proposals for policy reforms, the Report charts a course for people in all regions to face shared human development challenges together, fairly and effectively.

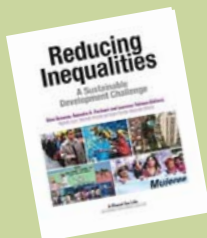


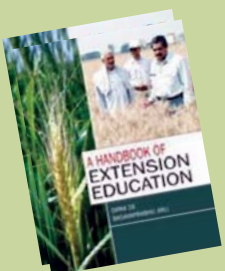
Reducing Inequalities: A Sustainable Development Challenge (A Planet for Life)

Rémi Genevey, Rajendra K. Pachauri & Laurence Tubiana, 2013, *Teri Press*, 265p, \$27.75, ISBN -9788179935309

The 2013 edition of A Planet for Life represents a unique international initiative grounded on conceptual and strategic thinking, and – most importantly – empirical experiments, conducted on five continents and touching on multiple realities. This unprecedented collection of works proposes a solid empirical approach, rather than an ideological one, to inform future debate.

The case studies collected in this volume demonstrate the complexity of the new systems required to accommodate each country’s specific economic, political and cultural realities. These systems combine technical, financial, legal, fiscal and organizational elements with a great deal of applied expertise, and are articulated within a clear, well-understood, growth- and job-generating development strategy.





Education for Agriculture and Allied Subjects in India

Deva Eswara Reddy, 2009, *Journal of Agricultural & Food Information, Volume 10, Issue 4.*

India, predominantly an agricultural country, has significantly improved the well-being of its people in recent decades. However, poverty remains India's most compelling challenge. With over half a century of development, agricultural education and research have been instrumental in ushering in a Green Revolution in the country. The United States land-grant colleges' model of teaching, research, and extension began in India in 1962 with the establishment of the first university specializing in agriculture. During the past 60 years, agricultural education has expanded rapidly in India to meet the nation's demand for human resources and agricultural technology. Currently, India has a total of 41 agricultural universities with a mandate for teaching, research, and extension in each of the states or regions. The Indian Council of Agricultural Research (ICAR), an apex body established by the government of India, oversees the working and accreditation aspects of the State Agricultural Universities. This article gives an overview of the past and reviews the present structure of education in agriculture and allied subjects at various levels.

Revitalising Higher Agricultural Education in India: journey towards excellence

Prabhakar Tamboli and Y. L. Nene, 2011, *Asia Agri-History Foundation Secunderabad, India*, 299 p, ISBN - 8190396331

This book, written By Prof. P M Tamboli and Y L Nene, aims at highlighting the need and urgency of building high quality human resources in the field of agriculture by strengthening agricultural universities in India. The book sets out to critically review and evaluate developments that have taken place in higher agricultural education in the country during the last four decades in the context of its role and importance in country's performance in agriculture sector. It summarizes the historical developments, discusses the changes in the higher education system, and suggests future directions to meet the challenges of the 21st century in the globalized world. Discussed in the process, is also the role of Indian Council of Agricultural Research (ICAR) and bilateral & multilateral donors in supporting higher agricultural education.

Strengthening Agricultural Extension and Advisory Systems: Procedures for Assessing, Transforming, and Evaluating Extension Systems

Burton E. Swanson and Riikka Rajalahti, 2010, *Agriculture and Rural Development Discussion Paper 44, The International Bank for Reconstruction and Development/The World Bank.*

The purpose of this book is to provide information on how to transform and strengthen pluralistic agricultural extension and advisory systems in moving toward the broader goal of increasing farm income and improving rural livelihoods. The focus of this book is primarily on the technical knowledge, management skills, and information services that small-scale farm households will need to improve their livelihoods in the rapidly changing global economy.

In addition, the book will also include information on how extension should help all types of farmers in dealing with escalating natural resource problems, including climate change. The primary focus of this book will be a comparative analysis of different extension strategies, organizational models, institutional innovations, and resource constraints and how an extension system might be transformed and strengthened through specific policy and organizational changes as well as needed investments.

A Handbook of Extension Education

De, Dipak, Jirli, B, 2011, *AGROBIOS (INDIA)*, Rs. 300, ISBN - 9788177544046

Extension education A has to change in harmony with fast changing national and global scenario. The information and communication technological advances in transfer of technology have changed the TOT paradigm. The book Modern Extension Education emphasizes to provide a comprehensive reading material for extension professionals, students and researchers. This book will fulfill the needs of ICARs restructured postgraduate (masters and doctoral) course curricula and syllabi of extension education at the national level. The book is divided into seven parts, each dealing with separate aspects.

Promoting youth as agri-preneurs

Dipendra Pokharel and Resona Simkhada

Through an innovative pilot programme on training rural youth in sustainable agriculture, the Ministry of Agriculture Development in Nepal succeeded in addressing two major issues – food security and rural employment. Inspired by the success of the pilot initiative, the government is all set to scale up this programme widely across the nation.

Agriculture is no longer seen as a remunerative livelihood option in Nepal. Also, owing to lack of supportive extension system, farmers, particularly the youth, are migrating to towns and cities seeking non-agricultural opportunities. The aged and the women who are left behind are finding it difficult to manage the farms on their own.

To encourage youth in agriculture, the Regional Agriculture Training Center (RATC) at Pokhara under the Ministry of Agricultural Development, in collaboration with District Agriculture Development Office (DADO), launched a Self Employment Project in Agriculture. The Village Agricultural Workers (VAW) training project was launched in the year 2010 with an objective of encouraging rural youth to become agri-preneurs and also promote improved and sustainable practices to others.

Village Agricultural Workers Training Project

Twenty seven rural youth (15 male and 12 female) from 27 different Village Development Committees (VDCs) of Kaski district in Nepal, were selected for this programme.

Trainees learning about mushroom production





Trainees preparing pits for compost preparation

The training package included 6 different modules. The training program comprised a combination of different methodologies including classroom presentation and discussion providing reading materials, group work, case studies, project work, brain storming and field visits. For making this project work, farmer's real problems were understood and more participatory techniques were opted. A curriculum was developed with the involvement of agricultural scientists, agricultural officers and other stakeholders from various related organizations. Not only the general expertise gained by the trainers was included in the course, but also importance was given to the local and the specific problems encountered by the farmers in their localities.

The training program was delivered in Nepali language. Each day consisted of four sessions with each of one and half hours. Group exercises were done for the majority of the problems.

The training program lasting for 51 days provided the participants an in-depth insight into the agricultural techniques of crop production, insect and disease management, post-harvest handling and market management at the training center.

Including youth in agricultural development

After the completion of the training program, the trained youth were placed in VDC office in their respective villages as Agricultural Volunteers with a monthly income of Rs. 4500 for the first year. They receive this for serving the VDC office for a maximum of 10 days in a month. They have been participating in agricultural program planning, organizing and handling of village level meetings, acting as a bridge between the District Agriculture Development Office and farmers. They are also involved in monitoring the program and project implementation. In some places, they also participated in peace building activities by using

Success Stories

Ms. Sunita Acharya, about 27 year old, after completing the 51 days training program, has been teaching other farmers in her village about offseason vegetable production technologies, improved compost preparation, sustainable insect and pest management using local botanicals. Besides, she also became an agri-preneur by setting up 10 plastic tunnels for offseason vegetable production. Presently Sunita earns around Rs. 60,000 from each tunnel, every season.

Mr. Khimlal Subedi, one of the participants of VAW training program has now become a successful entrepreneur. Integrated Pest management options and techniques dealt in the training program inspired him to open an Agrovet at Chhorepatan in Kaski district. Through his center he sells agricultural inputs while providing technical advice.

conflict management techniques, learnt during their training program.

Several advantages were found in mobilizing the local youth farmers rather than a junior agricultural technician from outside. As these youth were familiar with the locality, they could easily and quickly identify the problems of farmers. Villagers too accepted their words, ideas and techniques more easily. These

Training is often considered as an expenditure. It is in fact an investment in human resource development which can reap rich benefits.



A visit to National Maize Research Programme at Chitwan

young leaders served as a contact point for different stakeholders. As agricultural entrepreneurs, they served as a model for other villagers to follow them and adapt the new and sustainable farming technologies. This training delivered a positive and optimistic view towards agriculture as a livelihood option and agri-preneurship among the rural youth.

Factors for success

Different organizations under various ministries have been implementing various self employment training programs for the youth. RATC too, after its establishment in the year 1968 by the German Government, has been conducting many training programs on youth self employment. However, none of them were as successful as this VAW programme. Some of the factors responsible for this success are:

- An agreement with respective VDC was in place to absorb the rural youth after the successful completion of the training program. Therefore the youth found avenues to use their training immediately after the training programme.
- Knowledge and skills related to the formation of enterprises, business planning and enterprise development helps them in becoming a successful agri-preneur. This training had equipped the youth with such skills.
- The customized curriculum based on real problems, designed for this training program equipped them with strong technical backup and confidence to run their enterprise and solve village level farm problems.
- Feedback on technical knowledge on a regular basis enhanced trainees knowledge on the subjects.

Way forward

This project was a very small attempt by RATC, Pokhara in collaboration with District Agriculture Development Office, Kaski district. This year, Government of Nepal, as prioritized through the program of National Planning Commission, Nepal announced to extend this programme throughout the country. SACRED-Nepal, a newly established national level NGO, aims to assist the government in preparing VAW in each VDC throughout the nation for the coming five years with the lessons learnt from the RATC's project's design and its successful outputs. This initiative is expected to promote sustainable farming technologies option on a wider scale which will significantly boost the agricultural productivity of the country. It is also expected to tackle unemployment while ensuring nation's food sovereignty and economic prosperity.

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