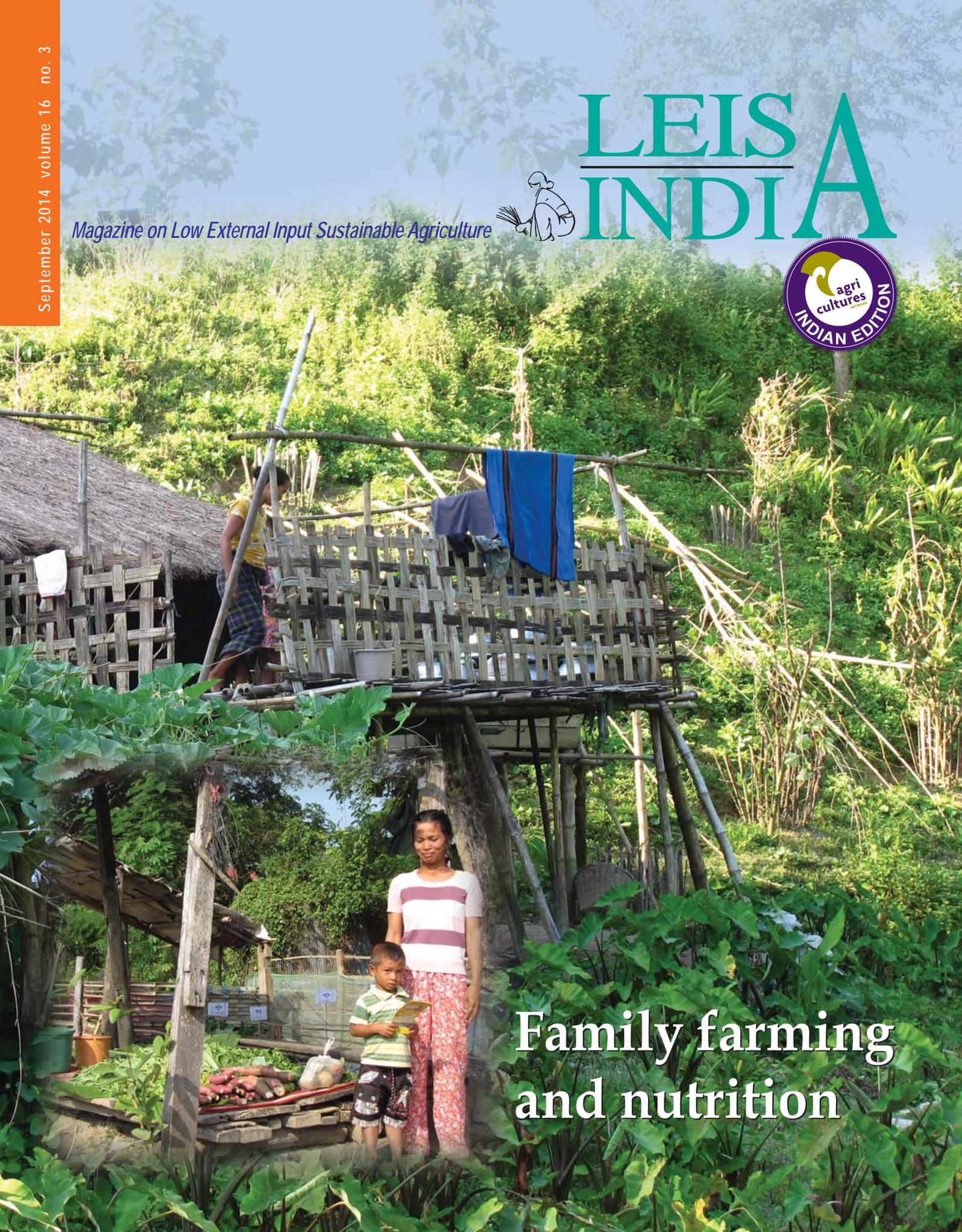


*Magazine on Low External Input Sustainable Agriculture*



# LEIS INDIA



## Family farming and nutrition



December 2014 Volume 16 no. 4

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A homestead garden in Bangladesh.

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The editors encourage readers to photocopy and circulate magazine articles.

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# Dear Readers

India is the largest producer of milk and second largest producer of fruits and vegetables in the world. Despite this, it is sad that around 43.5% children, under the age of 5, are underweight and 50% of pregnant women are anemic. Along with under nutrition we also have the other extreme of over nutrition in urban pockets, leading to health issues like obesity and diabetes. It is time to shift our focus from quantity of consumption to quality and diversity of the food consumed.

Nutrition security is dependent on several inter-related factors such as food production, food access, poverty, gender, access to health and sanitation, and cultural beliefs and practices. The articles in this issue highlight some of these factors. This issue of LEISA India includes a number of initiatives that help improve family nutrition, for example kitchen gardens, enhancing production of millets and pulses, which are rich in nutrients.

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, kindly send your contributions along with the enclosed form.

*Wishing all our readers a Happy New Year!*

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.

**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](http://www.theagriculturesnetwork.org)). The network, with members from all over the world - Brazil, China, India, 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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**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](http://www.amefound.org)

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There was a time when what we ate was really what the forest, mountain or sea had to offer, and which would differ from week to week and from season to season. Eating was as diverse as the environments that people found themselves living in.



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## Family farming and nutrition

*A biodiverse home garden in Nepal*

**G**ood nutritional status is an important indicator of development. Despite an apparent surplus of food grains at the national level, and several efforts being made through favourable public policies, malnutrition persists. India is challenged with 43.5% children under the age of 5 being underweight (the highest rate in the World) and 50% of pregnant women being anemic. This is more true especially with the poor and vulnerable groups. This highlights that national food security alone is not sufficient to attain to nutrition security, especially at the household and individual level. Ironically, this is the situation, in spite of being the World's largest producer of milk and second largest producer of fruits and vegetables.

Nutrition security is dependent on several inter-related factors such as food production, community and household level food distribution, poverty, equity, access to health services, education levels, access to safe drinking water, environmental sanitation and hygiene and cultural beliefs and practices. In India, several pioneering efforts are being made through public policies to address the challenge – eg. National Food Security programmes, Public Distribution Systems focusing on food entitlement and access; social health care and hygiene programmes; National Rural

Employment Guarantee programmes. However, nutritional outcomes, seem to be less defined.

Agriculture is fundamental to India's inclusive and sustainable structural economic transformation. According to IFPRI, ignoring the agriculture –nutrition pathways in India will have enormous economic and social costs. One solution lies in strengthening small holder agriculture and household food and nutritional security. The examples in the issue illustrate, small is not only beautiful but also healthy and sustainable. The producer, the small holder farm families, who constitute the majority of the rural poor and vulnerable in India and South Asia, produce healthy produce for self consumption as well as contribute to marginal surpluses.

### **Nutrition from nature**

Our culture and our ecosystems provide us the necessary nutritious food. It is important that we do not lose our connection with our roots. Our tribal communities still have a strong communion with Nature, and know the value of each plant. Deforestation, displacement, urbanization, big dams, industrial mining, mega-plants, the spread of cash-crops and monocultures – all have contributed to the assault on the biological and socio-cultural

habitats of our enormously rich diversity of uncultivated foods, evolved over millennia. We have lost track of thousands of edible species, not even aware of them. (Bharat Mansanta, p.15).

Dominated by horticultural knowhow, supermarket convenience, food fashions, we have lost connection with forest, mountain and sea. We need to refocus on dietary diversity, need to celebrate local diversity and medicinal uses of the diet, respect contexts and cultures, rediscover recipes for better health and higher self esteem and pride. (Zayan Khan, p.29).

## Expanding the food basket

The enormous focus that very few crops like rice and wheat gained during the green revolution period, has systematically replaced all other local food grains. Traditionally, food habits in each region were primarily determined by the context, culture and food crops grown in the region. For instance, millets like ragi was a preferred food in Karnataka, jowar in Maharashtra, bajra in Rajasthan etc. But during the green revolution period, millets which are hardy and rich in several nutrients got systematically replaced by rice and wheat. Along with millets there has been a decline in the cultivation of pulses, which are the richest source of proteins, especially for the poor.

There are a number of initiatives, especially from the civil society organizations to promote millets like finger millet, proso millet, kodo millet and barnyard millet. Efforts are not only made on increasing the area under millets, but also trying to influence policy. Millet Network of India (MINI), an all India alliance of 65 institutions, individuals consisting of farmers, scientists, nutritionists, policy makers, civil society groups and food activists representing over 15 states of India, are relentlessly working for including millets in the Public Distribution System in India.

A change in the crop choice or just including a nutrient crop as a mixed crop can make a lot of difference. Integrating a pulse crop can address the protein deficiency in the family. Efforts to increase the area under pulses are being pursued to improve access to nutrition. Recognising the contribution of pulses for balanced nutrition, farmers in Orissa, guided by ICARDA, focused on pulses cultivation. They cultivated pulses in rice fallows, which added protein to the family diet, income to the family, while enriching the soils (Atul Dogra, p.6).

## Kitchen gardens

Backyard kitchen gardens are by far the most notable strategies adopted by women groups for easy access as well as widening food baskets. Importantly, while the women are victims of malnutrition and imbalances, when empowered, they contribute significantly to the balanced diet in the families and beyond, with their awareness of various species and their health benefits. This knowledge cannot be lost to few costly foods aggressively marketed as solutions for all deficiencies. For example, in Dharmapuri, women started kitchen gardens as an off season activity, and are now growing them all through the year. This they could achieve by recycling used water from the kitchen (Krishnan, p.13).

Integrating multiple enterprises is another way of meeting nutritional needs of the family. Many of the farmer groups are involved in cultivating vegetables, fruits, herbs, spices, mushrooms, livestock, fish, bees. Some of them integrate poultry, pigs and goats. They produce balanced meal from diverse produce, enriching it with their culinary skills and identifying suitable substitutes to address season specific health needs.

Kitchen gardens are perceived as a solution to many nutrient deficiencies like Vitamin A, Iron and Calcium, as many vegetables are rich in these nutrients. For instance, Vitamin A and micronutrient deficiencies were addressed through cultivation and consumption of a mix of green leafy vegetables small animals, poultry and fish in the South Asian countries by Helen Keller International. When pursued as a programme for more than a decade with active partnership of 100 NGO partners, 900000 households could be influenced to change their food production and consumption habits. (Talukder, p.26)

Farmers, especially women perceive a lot of benefits from kitchen gardens, besides nutrition for the family. They are a source for generating additional income. Many of the households not only gained additional income by selling surplus vegetables, but they also saved money on buying vegetables from the market. (Krishnan, p. 13, Raj Uprety, p.21). Some of the resilient farmer groups have addressed droughts and flood like situations by opting for vegetable farming and fish paddy eco systems and using the bunds for growing vegetables. For some farmers, vegetable cultivation has helped in gaining social recognition. Some of them have become resource persons and some also hold prestigious social positions, successfully. (Roshan Mehta, p.23).

## Towards a healthy nation

For a billion plus population aspiring to be healthy and prosperous, these kind of examples offer hope. What is required is synergies among various actors, public, civil society, as well as private actors, with food sovereignty, access and affordability for the poor and the vulnerable, as corner stones. Of course, every consumer may be made more aware of what he is eating, the choices he is foregoing, the contribution made to food miles and lastly, how fast he wants to become (un)healthy.

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# Small farms, big values

*Combining rice and fish farming*

**Ranjan K Panda and Ajit Kumar Panda**

Small farmers in Odisha's disaster struck areas are finding new ways to ensure food and nutrition security for their families, and to cope with climate change impacts. Vegetable gardens and rice-fish farming initiatives are helping farmers meet the required food, nutrition and income needs of the farm families.

**S**mall scale farmers, many of whom are themselves among world's hungry people, feed the world's majority. In fact, family farmers not only produce the major share of the food consumed but also help preserve the environment. They continue to farm inspite of facing a number of challenges – like high production costs, lower yields, unsupportive policies, climate change impacts etc.

Farmers in Odisha have to continuously fight against the natural calamities to sustain in agriculture. While it is drought that affects

farmers in districts like Nuapada, it is the recurring floods in coastal districts like Kendrapada which makes farmers vulnerable. Farmers are trying to cope with such climate aberrations with new initiatives like vegetable gardening and integrated farming. This article talks about how these initiatives are helping in sowing the seeds of hope among the small farmers in two different geographical regions.

## **Fighting drought through vegetables**

Banamali Behera of Dohelpada village in Khariar block of Nuapada district owns 2 acres of land. He cultivates vegetables in half an acre all through the year. A dug well irrigates his crops and he uses a traditional water lifting device (*Tenda*) for this. Each member of the family is involved in this farming and two hours of labour for the entire family reaps them vegetables that they can eat and sell. *"It takes at least one hour everyday to irrigate the field and another hour for other works like weeding and digging of soil at root points"*, says Banamali. *"The land repays your labour – more you work, more you get. Thanks to this farming, we not only eat*



*Brinjals for harvest*



*Banamali tending his kitchen garden*

*vegetables regularly but are also able to get some cash income by selling almost half of the produce in the nearby markets,” says Sanjukta, Banamali’s wife.*

Like Banamali, there are several small farmers, around 30 in number, practicing vegetable farming in their backyard, to support the family health, nutrition and income. *“This village is in fact an example for the region”*, says Ashok Pattnaik, a volunteer with KARRBYA and VIKASH, two local NGOs that encourage farmers in their fight against drought. The case is the same with nearby Modosil village as well.

These are villages where rain fed paddy farming has been highly inconsistent and people used to migrate to brick kilns of Andhra Pradesh and other places in search of job. With increased droughts and crop failures, migration has almost become a regular feature. However, the villagers have successfully fought that out with

**Apart from adding to family nutrition, the integrated farming model has helped farmers improve their financial position.**

vegetable farming. And the two NGOs have been trying to help the villagers linking them with appropriate government schemes too.

### **Ponds of fortune**

In Kusumkhunta village of Boden block in the same district, the stories of Chhatar Majhi and Ujal Majhi are worth citing. Both these marginal farmers depend upon wage work for a living and possess very small pieces of land of their own. The rain fed small holding is not enough to meet even basic food requirements. However, things changed for the better, a year back, when these two farmers were selected by the Palli Sabha to get support under the MGNREGS, a government employment generation programme, to dig farm ponds. They received support of twenty thousand rupees each, under the *Mo Pokhari Yojana* (farm pond scheme) on their lands.

Out of the twenty thousand rupees, Chhatar and Ujal got fifteen thousand and fourteen thousand respectively, after deduction of the costs towards material and collateral expenses. Chhatar dug a pond in four decimals of his 70 decimals of land and fenced the entire plot to cultivate vegetables. He cultivated onions in 45 decimals, tomato in 10 decimals and ladies finger, sunflower and some other local vegetables on the embankment of the pond. *“We ate vegetables throughout the year and sold the rest to earn fifteen thousand rupees this year. I don’t have to migrate to far off Andhra again,”* says a visibly happy Chhatar.

Ujal too, now irrigates 50 decimals of his farm to produce onion. He added *Arhar* farming on the farm bunds. Ujal claims of earning fourteen thousand rupees this year and has stopped migrating out. Both these small farmers have dug the ponds using labour of their family members. It means, the wage labour they earned from MGNREGS came to the family itself while the assets were created for themselves. Another eight small farmers of the village have followed the suit. The village is now a motivation for others in the locality.

As Ashok Pattnaik informs, kitchen gardening has been an age old practice of farmers in this area. In the past, every household had a vegetable garden in their backyards, to fulfil the family requirement of nutrition. In due course, the practice ceased, labour shortage being one of the prominent causes for this change. Now, with the efforts of the NGO, in every village one can find at least 20 to 30 percent families engaged in backyard vegetable farming. Most of them also produce marketable surplus which meets their cash needs.

### **Integrated farms of rice and fish**

In Padmanavapatana village of Rajnagar block, Kendrapada district, recurrent floods have restricted farmers to paddy cultivation. But now, farmers have found a new support through a multi-country initiative named ‘PARIVARTAN’ supported by Concern Worldwide and European Union and being implemented by RCDC, a local NGO partner. Small farmers like Kanchan Samal have been supported to add fishery and vegetable farming in their small paddy fields.



*Kanchan with her vegetables*

Kanchan was supported with 2000 fish fingerlings and necessary fish feeds, along with vegetable seeds and plants. In June 2013, she began preparing her 50 decimal backyard farm for setting up integrated farm. The piece of land was converted into a crop field cum pond where both paddy and fish can survive. An inlet and outlet for water was created so that excessive water can be drained out while the fishes stay inside the field. Farm bunds were converted into vegetable garden. Organic manure was used for both crop field and vegetable garden.

Kanchan is now a proud farmer with her income from the small backyard growing by almost two hundred percent, just in an year's time. *"I was earning about five thousand rupees from paddy. This year I have got eight thousand from fish and another three thousand from selling vegetables besides the income from paddy"*, says Kanchan. *"And you see, we did not have to buy vegetables and fishes for the family,"* adds Kanchan. She has helped her children buy bi-cycles, met their education expenses and has helped the family in many other ways. Janmejaya, a field staff of the local NGO says, *"All the small farmers who have been supported under this component have reaped similar benefits. Apart from adding to family nutrition, the integrated farming model has helped farmers improve their financial position."*

Saroj Dash, Technical Coordinator (Climate Change) with the Concern Worldwide, finds these initiatives to be very effective. *"Small farmers in cyclone and flood affected areas in coastal*

*Jagatsinghpur and Kendrapada districts have successfully adopted this composite farming model which helped them address the impacts of the disasters by creating opportunities to supplement family food, nutrition and income. These models have proven effective not only in the Indian coasts but also in Bangladesh. Rice - fish farming is helping to reduce the emissions from paddy fields to the extent of 23 per cent, addressing the larger issues of climate change"*, says Dash.

All these farmers have fought disaster and poverty successfully by ensuring food, nutrition and income security. Well, they may be poor money-wise, but have made a giant stride with their small possessions. Evident enough, land holding however small, matters in addressing the ills of climate change.

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# Consuming more pulses

## *Can it be a solution to fight malnutrition?*

**Atul Dogra, Ashutosh Sarker, Aden Aw Hassan,  
Pooja Sah and Aqeel Hassan Rizvi**

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For the majority of Indians who are poor, pulses form the most important source of proteins. Increasing production of pulses and improving its access will help reduce malnutrition among the poor, especially the women. Initiatives to enhance pulses production in Eastern Indian states has resulted in enhancing nutrition for the family, besides generating additional income, improving soil fertility and reducing migration.

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**S**outh Asia is home to half of the world's poor, 75% living in rural areas. The region is also home to a large number of urban and rural poor who spend a large proportion of their income on food. The 2014 Global Hunger Index (GHI) Report ranked India 55<sup>th</sup>, amongst 76 countries with hunger situation. While no longer in the 'alarming' category, India's hunger is still classified as 'serious' according to GHI 2014.

*Dr Sarker, Regional Coordinator ICARDA,  
observing Grasspea in Uttar Pradesh*



The World Bank estimates that India is one of the highest ranking countries in the world for the number of children suffering from malnutrition. The prevalence of underweight children in India is among the highest in the world. Nearly half of India's children - approximately 60 million - are underweight, 45% have stunted growth (too short for their age), 20% are wasted (too thin for their height, indicating acute malnutrition), 75% are anaemic, and 57% are deficient in Vitamin A.

The problem of nutrition is two-fold – under nutrition and over nutrition. While majority of the population in India suffer from under nutrition, those who belong to higher socio economic status face problems owing to over nourishment. This simply means that in both the cases, the dietary intake is imbalanced. Some well known reasons for this imbalanced nourishment is lack of awareness, economic, religious and cultural factors. Also, women in Indian households consume less nutritious food as compared to men, affecting the nutrition and well being of both women and their children.

### Indian pulses: much achieved and much awaited

For the majority of Indians who are poor and who do not eat meat products, pulses form the most important source of proteins. To meet the ever growing domestic demand for pulses, however, the area and productivity under pulses have to be improved. As per FAO 2013 statistics, pulses are grown in 28 million hectares of area with an annual production of 18 million tonnes and yield of about 650 kg/ha. Main factors, inhibiting the growth of pulses in India are: cultivation is mostly (85% of the area) under rainfed conditions, on marginal lands, with low fertility and by resource-poor farmers, who can hardly afford inputs needed, non-availability of high yielding and location specific variety, low seed replacement rate (SRR), high susceptibility to pests and inadequate/inefficient market linkages. India on an average imports about 3-4 million tons of pulses.

Government of India, (GOI) is implementing need based programmes to increase pulses production from time to time, like Technology Mission on Oilseed and Pulses, Accelerated Pulse Production Programme (A3P) and newly introduced National Food Security Mission (NFSM) on Pulses in 2007-08. No doubt, there has been a significant increase in production of 18.45 million tonnes (MT) during 2012-13. Thanks, to the recently introduced Government lead initiatives like NFSM, which has helped Indian farmers to increase the production by adoption of improved varieties and using quality seeds as well as other inputs, from time to time. Mission was launched to bridge the yield gap in pulses through dissemination of improved technologies and farm management practices with focus on districts which have high potential but low level of productivity performance, at present.

There is a sharp decline in the availability of pulses from 70g/ capita/day in 1960-61 to 33 g/ capita/day in 2009-10, whereas, WHO recommendation is about 80 g/capita/day.

In Birbhum in West Bengal, vast areas remain fallow after rice harvest. For the first time, farmers received lentil seeds through an NGO named "Manab Jamin", a partner of ICARDA. Subrata and Moitree varieties were grown by more than 100 farmers in 8-10 villages. Farmers could harvest 610-1100 kg/ha in fallow lands. An average of USD 700/ha worth of lentil was harvested by farmers.

*Meghla Burman*, a marginal tribal farmer produced 110 kg lentil in 1/3 rd acre of land. He kept aside 7 kg as seed material for next years' cultivation. The rest was for his family consumption. He said, "I never thought in my dream that this piece of fallow land could give me such returns". He is keen to expand lentil production next year.

A tribal woman, *Ms. Laxmi Kiskuis* a daily wage labour. She received lentil as daily wage instead of money. She started feeding her daughter who was very weak, with lentils. And now, the girl child's health has improved.

Mission has also brought International Organizations like ICARDA and ICRISAT to work with Indian National Agricultural Research Systems (NARS) partners for yield enhancement by sharing their experiences at farm level. This synchronizing effect of CGIAR institutes and NARS partners not only helped Indian farmers in increasing the productivity by bringing the latest technology but also enriching the skills of the Indian farmers and scientists' by capacity building programmes.

Importance of pulses in improving the nutrition of the diet is also being recognised worldwide. There will be an increased focus on the research and extension on pulses in coming years in all countries with The United Nations declaring the year 2016 as "International Year of Pulses".

### Initiatives to enhance pulse production

The International Centre for Agricultural Research in the Dry Areas (ICARDA) in collaboration with its national partners are engaged in research and development to provide new lentil technologies to farmers to contribute to nutritional security and sustainable rice-based cropping systems in the region. ICARDA has global mandate on lentil research, since its establishment in 1977. ICARDA's South Asia and China Regional Program based at New Delhi is working closely with the NARS partners to make the region self-sufficient in lentil production. ICARDA has been working consistently with the national programs in terms of access to basic knowledge, sharing global germplasm and international nurseries with newly developed breeding lines and improved varieties, and capacity building of National Agricultural Research Systems (NARS). This has helped the national programs to develop high yielding disease resistant varieties with local adaptation and specific niches like rainfed rice fallows in India, Nepal and Bangladesh.

The main strategies followed includes: i) replacement of indigenous/local varieties with improved and farmers' preferred varieties in a participatory mode (vertical expansion) ii) targeting the new areas like rice fallows and in NE states (horizontal

expansion) iii) establishing the concept of Village-Based Seed Enterprises (VBSEs) iv) capacity development of farmers.

ICARDA with its national partners in India, under NFSM intervention carried out a program in five states covering nine districts for the last three years.

### Vertical expansion

One of the major problems faced by lentil growers is poor quality seed. During the last 3-4 years of ICARDA intervention in India, it was revealed, that more than 90 per cent of the farmers use the same seed for more than 6-7 years. In order to increase the productivity, it was felt necessary to enhance seed replacement rate (SRR) and also replace the present varieties with improved varieties.

A total of 12 improved varieties were made available to 4307 farmers in more than 300 villages. Using participatory methods, farmers were able to produce 1344 tons of quality seeds, which were distributed among farmers.

Along with improved varieties, certain technological interventions were also made resulting in increased yields. For example, varieties like Moitree, Noori and HUL-57 have shown increase of 30-60% over local varieties using farmer's practice. These varieties were grown both as relay crops under zero-tillage method as well as sole crop. Additional yields resulted in additional incomes to the

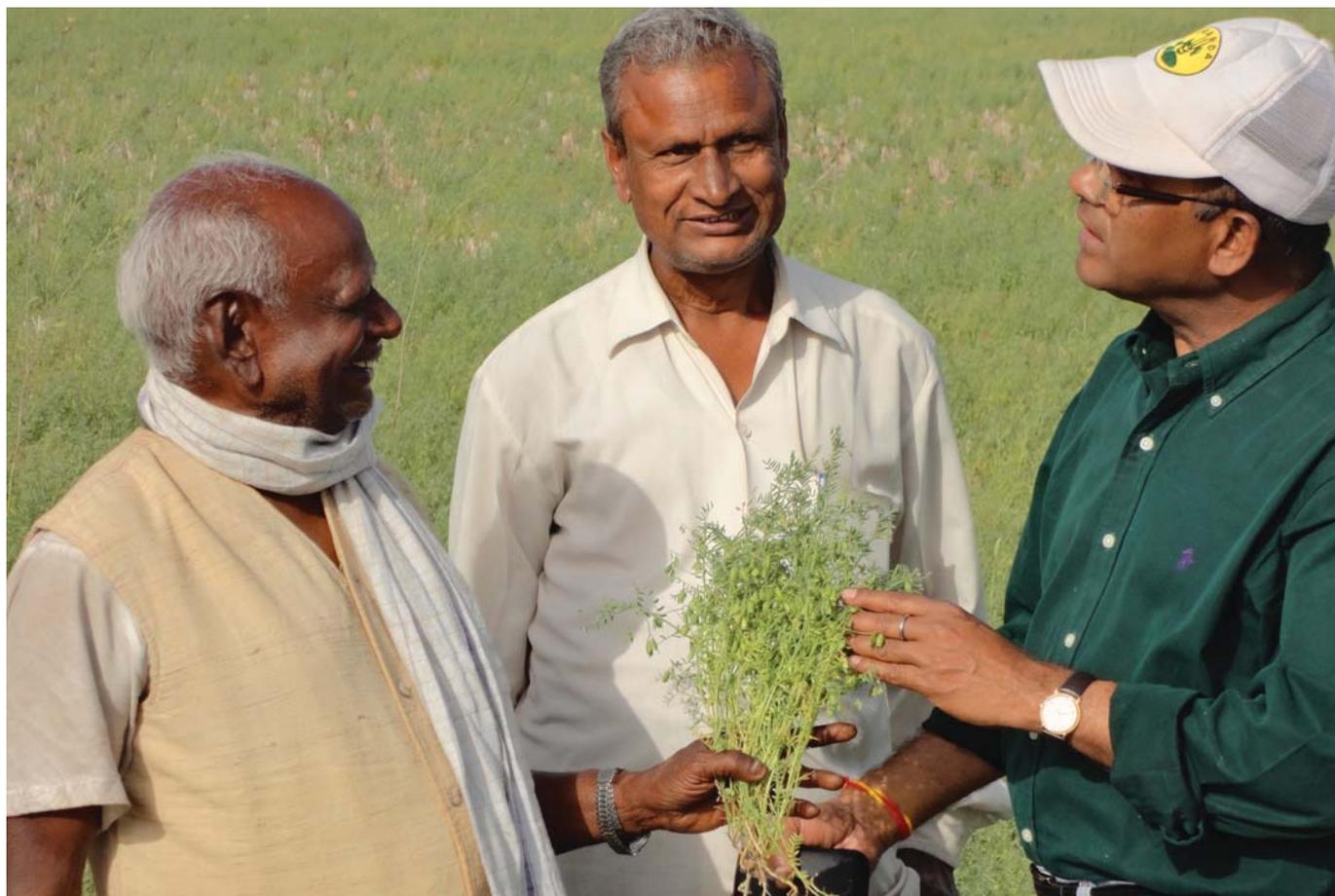
tune of approximately USD 2.0 million besides improvement of soil health as a long-term benefit. The key contribution is that small and marginal farmers could produce lentil for their family consumption and provide nutritional security to their family members.

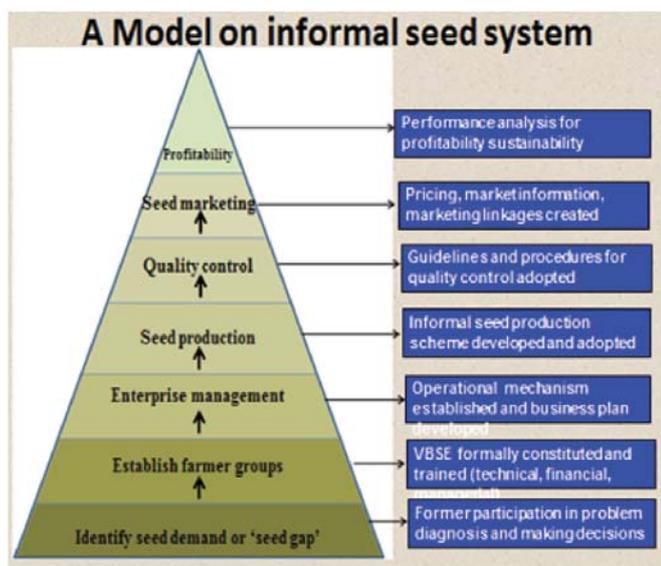
### Horizontal expansion

About 78.8% of rice area in the Eastern Indian region is rainfed, where, rice is grown only during rainy season (June-September). Fields are left fallow after rice cultivation and this area is approximately equivalent to the net sown area of Punjab, Haryana, and Western Uttar Pradesh. ICARDA with the NARS partners introduced short duration lentil varieties like HUL-57 and Moitree in these areas. Farmers, who were growing nothing earlier, are happy reaping returns from this additional crop.

Demonstrations were taken up by introducing lentil production in rice fallows adopting Conservation Agriculture methods, both under zero tillage and reduced tillage conditions. It was found that, growth performance of lentil was good under both reduced and zero tillage system. Reduced tillage recorded higher seed yield (513 kg/ha), stover yield (1624 kg/ha), net return (USD 272/ha) and B: C ratio (2.30) as compared to zero tillage. This may be due to moisture stress in zero tillage fields at flowering and grain filling

*Happy lentil farmer*





stages. However, total cost of cultivation was lowest with zero tillage cultivation of lentil. The demonstrations were taken up under OCPF-funded project in 7 districts of two states (Tripura and West Bengal) in India, benefitting around 1900 farmers. The cultivation of lentils gave an additional income of \$194-272 per hectare, while the cropping intensity doubled.

### Village Based Seed Enterprises

To address the issue of timely availability of quality seed at reasonable price, ICARDA promoted the concept of “Village Based Seed Enterprises” (VBSE). VBSE is an informal method of seed production and distribution. ICARDA is working with the national partners in the region for identifying the progressive farmers, who are leaders and have enough land for producing seed. These farmers are registered with a certification agency. Under the supervision of certification agency and the scientific staff, seed is produced and sold to the farmers locally at remunerative price. In this method, seed problem is addressed for farmer in the village itself and the seed producer also get benefitted.

*Seed Certification officer observing field in Bihar*



With the joint efforts with the national partners, more than 16 seed hubs have been developed in different states. Farmers are happy with this initiative. These farmers now supply seed to other villages/districts and even to other states.

### Capacity development

Capacity development is also one of the important strategies being followed in the region. Farmers were trained for seed production, improved package and practices, storing etc. Training was also given on value addition (daal, pan cake, namkeen etc.) and post harvest processing (storage, pre-cleaning, air-screening, packaging, dehuling, sieving, polishing, cooking quality, etc.), particularly to women farmers. A total of 7600 farmers including 551 women farmers were trained through Farmer Field School (FFS), travelling seminars, field days, pre and post-harvest trainings etc. Also, capacities of more than 1600 farmers were strengthened under OCPF project.

### Future focus

Promoting lentil production has resulted in enhancing nutrition for the family while generating additional income. In these areas, due to lentil production, malnutrition has been reduced, soil fertility has improved, labour migration reduced and animal feed became available from lentil straw.

Though beneficial to farmers, lentil production faces certain challenges which need to be addressed. Firstly, suitable varieties need to be developed which can adapt well under drought and terminal heat conditions, are disease resistant and which have good phenological adaptation under varying maturity periods. Secondly, the pulses marketing chain is fragmented and inefficient. Also, the government support in terms of minimum support price (MSP) for winter pulses is low, which forces the farmers to switch to cereal crops, when irrigation is assured. Hence, this needs attention. Also, there is a need for spreading awareness on the nutritive value of pulses, especially among women.

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# Nutrition gardens

## *Women lead the way*

**J Krishnan**

Women in rainfed areas in Dharmapuri are switching over to kitchen gardens, which provide nutrition to the family as well as money. By recycling the limited water available, these women have shown that it is possible to grow vegetables all round the year.

**P**ennagaram taluk in Dharmapuri district of Tamil Nadu, located on the western side of the Eastern Ghats, is unique in its geographical settings with undulated topography. The district with a hilly terrain limits the benefits from the flow of Cauvery river. The region suffers from acute water scarcity, affecting farming as well as consumption.

Groundnut is the major crop grown under rainfed conditions, along with intercrops like redgram, cowpea etc. These crops are not only a source of income to farmers but also serve as an important source of protein for the family and the livestock. However, over the past two decades, farmers have been facing challenges like frequent crop failures and increased production costs, resulting in low yields and low incomes. Also, with indiscriminate use of chemicals, not only is the soil health affected, but the ecosystem also degraded. Moreover, if monsoon fails in an year, farmers go in for finger millet, a hardy crop of rainfed regions. During such years, the households and the livestock are deprived of protein intake.

To address this situation and help farm families have access to nutrition sources, AME Foundation implemented a kitchen garden programme in 20 villages in Pennagaram taluk. This programme, as a part of Dharmapuri Farm Initiative (DFI), is supported by Srivats Ram Foundation, Chennai.

### **Initial efforts**

A close assessment of existing ground situation was done through a PRA. Large number of farmers, especially women participated, assessed the present situation and explored opportunities for future growth. Improving groundnut cultivation was seen as an entry point, to further expand activities like kitchen gardening.

Initially, around 25 young women from 20 villages were intensively trained on cultivating groundnut on ecological agricultural methods. These trainings were also used to enhance their facilitation skills during Farmer Field Schools (FFS). These trained



*Recycling kitchen waste water in vegetable gardens*

women, along with AME staff, co-facilitated FFS in each of the 20 villages. Around 400 women farmers got trained in groundnut cultivation using sustainable agricultural practices, through the season-long FFS.

### **Setting up kitchen gardens**

With a good groundnut harvest, the women were eager to learn many more things which could be of support to their families. This was the time when the idea of kitchen gardens for improved nutrition security was introduced. Women were enthusiastic to learn, especially during the off-season when they had no crop to grow. Thus, they were trained on establishing low cost kitchen gardens using eco-friendly methods.

Initially, women established kitchen gardens with 13 types of vegetable seeds in their backyards (Table 1). They started getting good harvests of vegetables and greens, which were used for consumption. Little surpluses were shared with the neighbours and also sold in the local markets. With growing access to vegetables on a daily basis, these families stopped buying vegetables from the market helping them save around Rs.2100, every month. In a month, each family could harvest 6-9kgs of brinjal; 7-9kgs of ribbed gourd; 10-14kgs of bhendi; 4-6kgs of bitter gourd in their backyards. Around 40% of this was sold by which they received an income of Rs.2000-2400. As a part of the programme, around 400 farmers established kitchen gardens in an area of 100 to 150sq.ft. in their homesteads.

After the initial enthusiasm in growing vegetables, women were faced with water shortage by which they could not continue or spread this activity. Vegetable growing was also dependant on rainfall and failure of monsoons affected kitchen gardening. To overcome this, women thought of reusing the waste water from

Table 1: Kitchen garden monthly output

Vegetables	Quantity of Harvest (kg)	Kept for family use (kg)	Given to neighbours (kg)	Quantity Sold out (kg)	Income through sale (Rs.)	Savings on buying (Rs.)
Radish	15-25	5-6	1-2	10-15	150	200
Beetroot	10-15	5-8	1-2	5-8	200	200
Snake gourd	10-15	3-5	1-2	4-5	100	200
Ribbed gourd	8-10	10	1-2	5	200	200
Bitter gourd	5-8	2-3	1	2-3	100	200
Tomato	25-30	10	1-2	10-15	400	200
Bhendi	15-25	5-6	1-2	10-15	200	200
Brinjal	10-15	3-5	1-2	8-10	300	200
Greens (4 types)	20-30	10	1-2	8-15	250	200
Pumpkin (4-5nos./head)	60-70	30	0.5	50	300	200
Carrot	5-10	5	1	5	200	200
<b>Total</b>					<b>2400</b>	<b>2100</b>

the kitchen. They made an assessment of the quantity of waste water coming out of kitchen and it amounted to 40-50 liters per day. Instead of wasting this water, they started directing it to the kitchen gardens. To make the best use of the little available resource, the water was filtered and poured into a drum of 50 liter capacity. The drum was fixed with driplets to irrigate the root zone of vegetable plants. Another innovative method was also tried out. One litre water bottles were used to irrigate creepers through drip method. By using these methods, water loss through evaporation and seepage were controlled, thus enabling efficient use of water. Now, almost all the farm families are recycling kitchen waste water to grow vegetables.

The entire family, including men and children are now interested in kitchen gardens. While men help in fetching water for the garden, erecting fence etc., women are involved in nurturing and protecting the plants by installing yellow sticky traps, and taking up activities like watering and harvesting. Young children also render support to their mother, during free time.

There is a visible change in food consumption patterns. The family diet now includes more variety of vegetables. There is an improvement in the health status as well. Women say that with increased intake of greens (fibres) they no longer have digestive problems.

Kitchen garden activity was taken up during the off seasons, i.e., from January to June during the initial two years (2010-11, 2011-12). Women have now extended it to the main cropping season as well, thus ensuring access to vegetables, all round the year.

### Spreading success

The success of 400 women farmers has grabbed the attention of many in all the villages. Around 300-500 more households across 20 villages have taken up this activity.

These women also had an opportunity to exhibit their knowledge on vegetable growing during the inaugural function of International



Greens in homestead garden

Year of Family Farming (IYFF) event, organised at Bangalore. The women displayed various types of vegetables of homestead garden and shared their experience.

For these women, kitchen gardens paved a way for building nutritional security to their families while helping them earn reasonable income. Also, women are relieved of the drudgery from travelling a distance of 10-15 kms for buying vegetables. Most importantly, these homestead gardens have become a source of strengthening family and social bonding.

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# The rich diversity of forest foods

**Bharat Mansata**

Our living planet is on the cusp of a critical transition. An era of relentless exploitation of non-renewable fossil resources must soon yield to an age of regenerating our living biological wealth and to a culture of nurture.

Almost two decades earlier, about two dozen of us pooled resources, to buy undulating land, now known as *Vanvadi*, in the foothills of the Sahyadris in the north Konkan Western Ghats; our primary aim – ecological regeneration and local self-reliance. Over the years, the land regenerated into a magnificent forest: tall, dense, and rich in biodiversity. A sample survey of the botanical wealth of *Vanvadi*, based on local tribal knowledge, surprised us with 52 plant species of uncultivated forest foods that provide edible yield (leaf, fruit, flower, stem, tuber/root), usually at a certain time of the year. The peak availability in our region is in early monsoon, when the agricultural produce of the past year has been largely consumed; and the farming population needs nourishment for the hard work of the new planting season.

At *Vanvadi*, a primary listing yielded over 120 forest species known to have various traditional uses. Apart from food yielding species, we discovered we had more than 45 plant species of known medicinal use; and at least 20 timber species, including four rated as ‘first grade timbers’. And then there are plants that yield natural dyes, soaps, edible oils, bio-fuels, gums and resins, botanical pesticides, leaf plates, etc., apart from fodder, fuel, fibre, manure, hedge protection, craft material, etc.

Many species have multiple uses. For example, the leaves of the mahua tree provide fodder. The flowers are used to make jaggery, liquor or porridge. The fruits can be cooked and consumed as a vegetable. The seed is crushed to yield a cooking oil, far more wholesome than any brand available in the market; and the residual cake after extracting the oil is a valuable manure for farm crops. When the Mahua tree dies, its wood is used for making carriages, furniture, sports goods, musical instruments, agricultural implements, and for house and ship building.

It is a tragedy that our GDP-driven economic civilization pays scant attention to the rich diversity of organic, nutritious foods, that our natural forests provide *free* in a most ecologically efficient manner — *without any external input whatsoever* of energy, water or fertility! Indeed, the forests are by far the most efficient agents of harvesting solar energy, sequestering carbon, ameliorating climate change, conserving and regenerating our soils and their



*A participant examines forest food on display during a tribal festival*

fertility, fostering biodiversity, and recharging groundwater, besides providing a huge variety of useful produce.

There are an estimated 80,000 edible plant species on earth, says the ‘Gaia Atlas of Planet Management’. Less than 150 plant species have been historically cultivated on a large scale as food crops. But with the spread of extensive industrial monocultures – grown with toxic chemicals for distant urban markets – barely 20 plant species now provide 90% of the entire human diet; and just 8 crops provide three quarters of all human food! That is a miniscule 0.01% (or one in ten thousand) of the edible species gifted by Nature. So under all the glitter and packaging of ‘multi-brand’ mega-consumerism, are we really progressing or getting impoverished?

In February 2014, I was fortunate to attend a vibrant Tribal Food Festival at Bissam in Cuttack, situated in the Niyamgiri foothills of Odisha. Over 600 adivasis, about 80% women, gathered from over 200 tribal villages of different states in eastern and central India – to celebrate the rich diversity of their traditional foods. More than 1500 food varieties – cultivated and uncultivated, raw

More than 1500 food varieties – cultivated and uncultivated, raw and cooked – were on display. Over 900 were uncultivated forest foods!



*Tribal communities display a variety of forest foods*

and cooked – were on display. Over 900 were uncultivated forest foods! Included too were 400 ready-to-eat recipes for sampling.

An adivasi of the Pahari Korba tribe declared, “*We Pahari Korba have always enjoyed a long and healthy life for generations, without any major ailments or diseases. For every minor disease, symptom or discomfort we depended on forest herbs, plants, vegetables, to get well, and we never visited a drug store, hospital, or took any injections.*”

Other adivasi tribals at the festival related how their uncultivated forest foods have been dependable sources of nutrition even in the most critical times of drought and agricultural failure, caused by increasingly erratic or scant rainfall.

But in many places, communities are now reporting a decline in the availability and consumption of uncultivated foods, due to a variety of external factors. Deforestation, displacement, urbanization, big dams, industrial mining, mega-plants, the spread of cash-crops and monocultures – all constitute a relentless assault on the biological and socio-cultural habitats of our enormously rich diversity of uncultivated foods, evolved over millennia.

The rich natural inheritance of our forested regions sustained our adivasi communities for generations beyond count. Today, if there are any people left on this earth who can teach our floundering ‘millennium generation’ the fine art and science of co-existing in harmony with the forest, it is these tribals. Or rather, just those among them now, who still retain the knowledge, the skills, and the native cultural perspective.



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## Call for Articles

### Towards healthy soils - organic matter matters

*Vol. 17 No. 1, March 2015*

Soils are healthy when they contain an adequate amount of organic matter. Healthy soils can retain more water and hold more nutrients. With climate change leading to more frequent and longer-lasting droughts, this is becoming more important than ever before. Farmers can increase organic matter content by leaving crop residues in the field, mulching and planting cover crops. The 2015 International Year of Soils is an excellent occasion to draw attention to the crucial importance of increasing soil health.

Realising that organic matter and soil life increase their productivity and resilience, family farmers around the world work hard to ensure favourable soil conditions. What strategies are farmers using to manage organic matter and enhance soil life? What problems do they encounter and what benefits do they reap? Do you know farmers who have successfully gone through the transition process towards healthy soils? What can farmers, scientists and policy makers learn from successes and failures in these transition processes? We look forward to your insightful stories and practical evidence.

*Articles for the March 2015 issue of LEISA India should be sent to the Editor at [leisaindia@yahoo.co.in](mailto:leisaindia@yahoo.co.in) by 1 February 2015.*

### Rural-urban linkages

*Vol. 17 No. 2, June 2015*

When directly engaging with farmers, citizens play an active role in shaping the way their food is produced. Involvement ranges from direct purchase to talking with farmers about what and how to produce. Many such initiatives are driven by young people. As a result, new agroecological practices have developed and the nutrient cycles are closing, leading to healthier farming systems and fewer food miles. Food cultures are developing around defined area, seasonality, freshness and fair prices.

The June 2015 issue of LEISA India will focus on linkages between the rural and urban worlds. How are these changing in the process of development? How do family farmers respond to changing urban consumption patterns? How is knowledge about food and farming co-created between rural and urban communities? What is the role of youth and of women? Are there examples of successful marketing strategies to promote food from family farms in the cities? What are the experiences, lessons and challenges of collaborative efforts between consumers and producers, in producing healthy food? We look forward to your insightful stories and practical evidence.

*Articles for the June 2015 issue of LEISA India should be sent to the Editor at [leisaindia@yahoo.co.in](mailto:leisaindia@yahoo.co.in) by 1 May 2015.*

# Homestead gardens for food security

**Suman Sahai**

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In Kerala, the Green City initiative by the state government is catching up. Urban households are practicing "terrace gardening" helping them meet the family nutrition needs by growing fruits and vegetables.

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**O**n my recent visit to Kochi, I looked out of my hotel window and saw that adjoining the hotel boundary was a modest house with a yard, the way traditional houses in villages have and small towns used to have till the real estate mania began to destroy the ecology and beauty of such spaces.

My neighbours in the middle of Kochi city were obviously a traditional family with sound values. Their yard had one jackfruit tree in the corner, near the boundary wall, two breadfruit trees (breadfruits are similar to jackfruits although the trees look very different), three areca nut palms with pepper vines climbing up their trunks, two coconut palms, one guava tree, one drumstick tree, two hibiscus bushes, the flowers of which are used to make chutney, a couple of yam bushes and about 10 dwarf banana plants. There was chilli and tomato planted in the space between the trees and one or two other plants I could not identify. The total area of the yard would have been about 300 square yards.

I was thrilled to see this working model of what was a sophisticated homestead garden which obviously gave the family food (including condiments and spices) and incomes (areca nut, surplus banana) throughout the year. Breadfruit is a prolific bearer and yields fruits over several months. It is eaten as a vegetable in much the same way as jackfruit but also as a staple like yam. Tubers continue to be a staple in Kerala cuisine and one can spot tempos (no hand carts here, this is Kerala!) parked in the city selling a variety of tubers.

Such gardens, they may be of differing complexities, are one of the key strategies for household food security as well as nutritional enhancement. Some or the other food comes to the household all year round to supplement the standard rice-based diets that come either from the farmer's field or from the market.

The composition of a homestead garden will obviously vary from location to location, depending on what grows in the area and what the food preferences of the local people are. In many parts of north India, for instance, such a homestead garden could contain drumstick, the pods and leaves of which are highly nutritious and

available all year round, bananas, papaya, lemon, sweet potato and other tubers, pumpkins, which are rich in Vitamin A, some legumes like cowpea, beans and mung, perhaps a mulberry tree and one of jackfruit. Availability of space and food preferences will determine what is planted in the garden but whatever is in it will enrich the family's food basket and improve its nutritional intake. The great advantage of homestead gardens is that the food comes directly to the woman of the house since it is she who would normally tend such gardens. This food is likely to be used optimally in her kitchen to the benefit of the entire family.

Another excellent initiative promoted by the horticulture department of the state government in Kerala is the Terrace Garden programme, locally known as the Harita Nagari (Green City) programme. In this programme, largely undertaken by housewives, the government encourages cultivation of vegetables in pots using terraces, verandahs and other spaces available in flats and housing in densely populated urban centres where there are no yards or spaces around the dwelling area. The horticulture department provides (and does this without making you run around 20 times) seed, fertiliser, pots and even implements to start the terrace or verandah garden. This is backed up by information and know-how on how to get the best results from such potted gardens.

The result of this initiative, which is wildly popular, is a steady supply of some or the other vegetable for the cooking pot year round. The vegetables are clean, often organic and easily available on demand. The lady of the house cooks whatever happens to be available in her pots that day. The nutrition of the family is ensured as is its dietary diversity. When there is a surplus, the housewife can sell this to outlets established by the horticulture department. During festivals, like Onam when there is a big demand for vegetables, a not insignificant supply of vegetables is contributed from within the city by such terrace gardens. Everyone is a winner, the supply of fresh vegetables in the city is augmented and the housewife makes a little profit.

This interesting enterprise can be replicated across the country in dense urban and semi-urban centres. Not every state is blessed with Kerala's balmy weather which is supportive of easy cultivation year round but state specific packages can be worked to accommodate local weather conditions.

*This is an edited version of the original article, "Homestead gardens for food security", published in the Asian Age, April 2012.*

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# *“Gastronomy is a search for tasty food, a search for healthy, local, nutritious food”*

## **Interview: Teobaldo Pinzás**

Promoting the holistic nature of nutrition and its links with family farming and local markets is Luis Ginocchio's 'bread and butter' as the expression goes. For Peru's former Minister of Agriculture, who also authored the book 'Small farming and food', it is an overriding interest. It is his business. But he has a different approach, connecting nutrition with gastronomy. Gastronomy is defined as the practice of choosing, cooking, and eating good food, or the cookery of a particular region. Ginocchio links it directly to local food, local crops and animals, and so to local food production systems.

### **How can gastronomy address the link between family farmers and nutrition?**

I work with the Peruvian Gastronomy Society (APEGA), and we are currently helping to articulate the views and needs of small scale family farmers and small business in our cities' food markets, and improving their business management tools. We have been working with a group of farmers for more than a year now, shortening marketing chains with a new Sunday market in Magdalena district near the centre of Lima. Lima's markets are key public areas to strengthen the prosperity of family farmers as well as the nutrition of urban families. We also hope to improve how these markets are managed and run. A third component we are working on is an information system that will include not only the prices of the main crops at the market that are produced by family farmers, but also the territories that the various products come from, and how the producers are organised. These will all help consumers to recognise the origin of the food they buy, while also increasing the income of family farmers.

### **What are the main challenges for your initiatives?**

Family farmers face a number of challenges in order to be able to market their produce, such as long distances from the farm to



Photo: APEGA

*Ginocchio speaking*

asphalted roads, especially in mountainous areas, being far from markets in larger cities. They are also struggling against the growing popularity of other, illegal crops. We also feel that gastronomy faces a double challenge in Peru. The first is to make family farming viable, considering it produces the largest amount of food in the country. The second is to fight against nutritional deficiencies, expressed in high rates of chronic child malnutrition, reaching levels of 40% and more in some parts of country. This highlights a great paradox: Peru, a country that has such a great agricultural biodiversity, such an abundance of species, such a huge variability of flavors and nutritional content in the food that it produces, originating from amazingly varied ecosystems, still has such very high rates of child malnutrition.

### **What is your strategy for reducing malnutrition?**

We are working on another project that we have called 'the Peruvian diet', through which we aim to promote a healthy, nutritious and tasty style of eating that will increase the well-being of Peruvians, especially children. We are going to launch the Peruvian diet at the end of 2014 in a food fair. The Peruvian diet will promote the

consumption of many nutritious Peruvian dishes and the produce of small rural agricultural enterprises, many of which have been replaced by other products brought in by globalization. Therefore, what the Peruvian diet aims is to persuade consumers that we need to recover what we have lost, in other words, the consumption of traditional products with a positive effect on our nutrition. We are going to do this with the support of the Ministry of Agriculture, and we hope that the Ministry of Health will also participate, as well as the Ministry of Development and Social Inclusion, which, through its school breakfast programme, plays a very important role in the development of local food supply. It is essential, for example, that this programme should purchase local produce. The slogan proposed by APEGA for 'the Peruvian diet' project is "Eat tasty, eat healthy, eat Peruvian". In other words, we must revalue what we have, in order to innovate, recover our best culinary traditions, and use the immense pantry provided by our biodiversity to win the fight against the scourge of hunger and chronic malnutrition, especially in children.

**"Eat those products that are near you, the products produced in your region, and recover the eating habits of your parents and grandparents."**

#### **What is your message?**

The message to the general public is "eat those products that are near you, the products produced in your region, and recover the eating habits of your parents and grandparents". The Peruvian diet calls on governmental organisations to take ownership of and promote this initiative, especially in the regions with the highest rates of malnutrition.

#### **Is this about going back or looking forward?**

The revaluation of locally produced food does not mean a denial of modernity, it means recovering what made us strong, what gave us vigour in earlier generations. We have no qualms about saying that globalization is positive for the world. But to improve our nutrition we need our family farmers and our local retail food markets. In Lima alone there are an estimated 2000 markets, including street markets, open markets and groups of stalls where good food is sold, as well as countless neighbourhood grocery stores where fresh produce can be found. At the same time, there is a change in the food paradigm worldwide. Not long ago I was reading about a global hamburger chain that has seen its sales go down consistently over the last two quarters because consumers are opting for local food, as these people now want to recover their local cultural expression. Gastronomy is a cultural industry; it is an expression of our people. The search for healthy food is also a search for tasty food – a gastronomic search. Every year we hold a Gastronomy Fair called Mistura. This year a chef and a farmer cooked side by side, providing a wonderful image of how we work together to tackle the challenge for healthy food.

#### **What about obesity?**

Malnutrition is also about inadequate eating, which generates another public health problem, obesity. Eating well is also about the combination and the volume of what we are eating. At the Mistura Gastronomy Fair this year, it was said "eat tasty, eat healthy, eat Peruvian and eat little." This is a message that needs to be disseminated, and APEGA is collaborating with the Public Health Ministry, NGOs and diverse local organisations around campaigns

*Andean grain quinoa*



Photo: APEGA



Photo: APEGA

Lima market

to promote better eating. This means that we must balance, combine and measure our rations.

**“The revaluation of locally produced food does not mean a denial of modernity, it means recovering what made us strong, what gave us vigour.”**

### **Is Peru alone in its efforts?**

No. The Public Health Ministry of Brazil has recently published an update of its guide on nutrition, a document that provides guidance to the country’s consumers. Our sisters and brothers in neighbouring countries are also making efforts to promote good health and nutrition by bringing old traditions back to life, recovering ingredients and products that are not or only rarely consumed today. To innovate means to apply knowledge in new places, but we must not deny the origin of this knowledge. Our knowledge about food comes from far back in time, our history, containing wisdom on which we have to continue building.

### **How can this help family farmers?**

Some people think that family farming cannot ensure the adequate nutrition of a growing population. They insist on the idea of incentivizing large-scale ownership of agricultural land and the application of ‘conventional’ or industrial farming, with the intensive use of synthetic fertilizers, pesticides and even genetically modified seeds. So this defines our pending agenda – how to make family farming a viable enterprise. But very importantly, we have to face the challenge of how to make the countryside attractive to a younger generation, because most farmers today are more than 50 years old. This is related to the promotion of effective producer associations and to the need to increase productivity.

### **Where do we go from here?**

We are trying to create a change in market demands, so that more people will buy the products of family farmers. But family farmers must also produce foods that meet market requirements. At APEGA, we have just undertaken analysis that found that the current cost of labour in Peru makes it difficult for family farming on terraces to be viable. The conclusion is that recovering the terraces requires mechanisation. It is paradoxical that in a country that needs to generate employment we have to recur to mechanisation, but without it there will be no production and the terraces will be abandoned. Cultivating terraces is a pre-Hispanic technique that enables us to increase the area of agricultural land, and Peru is a country with very little actual agricultural land per capita.

**“We are a country where people can come and learn how to eat”**

We are not a country with great expanses of land in which to sow genetically modified crops, as other countries do, especially in South America. To the contrary, we are a country that can produce a great variety of crops, with very diverse tastes, scents, colours that can excite the palate, to supply our gastronomy, and our nutrition. We are a country where people can come to learn how to eat. APEGA is conscious that this is a very ambitious goal, but we are working towards it day in and day out, so that nutrition becomes one of the great components of gastronomy to the benefit of everyone in our country, and beyond.





Photo: Author

# Getting the most nutritional value out of the farm

*Laxmi's rice field*

## Raj Uprety and Rajendra Uprety

Farmers in Nepal are getting the most out of their farms, both in nutrition as well as in economic terms, by integrating a variety of crops on the farm.

**L**axmi Acharya's farm is often mistaken for a mini botanical garden. This is no surprise given the diversity of plants and animals on her farm.

With helping hands from her husband and children, Laxmi owns and runs a small family farm in Belepur, Koshi-Harincha municipality, Morang district of Nepal. Her farm is a total of 2000 square meters and well managed diversity is the key to its productivity. Six hundred square metres are occupied by the house, fruits and vegetables. She keeps a pair of cows, a pair of goats, 10 pairs of pigeons and 10 chickens. She also has a fish pond that contains about 100 *Mungri* (Catfish). The rest of her land, about 1400 square metres, is covered with scented Basmati rice fields under System of Rice Intensification method.

Laxmi gets the most nutritional value out of her rotations and the complementarities between her crops and animals. For example,

during the rainy season she plants rice and after harvesting rice, she plants potato and mustard mixed with lentil and other vegetables. Mustard provides oil for the household while lentil and other vegetables provide food and extra income. In spring, she plants maize which is used for home consumption as well as for animal feed.

She raises a wide variety of fruit trees and vegetables. Mangoes, papayas, arecanuts, pomegranate and coconut, besides meeting household consumption needs also fetch additional income. The farm meets the vegetable needs of the family during all the seasons. Diverse vegetables are grown and consumed which provide all the necessary nutrition to the family (see Table 1). For example, brinjal, bitter-gourd, lady-finger, sponge-gourd and colacasia are

By combining crops, livestock and poultry, Laxmi's farm has provided both nutrition and extra income for her family. The family earns more than NRs. 158,000, by selling surplus harvest.

Table 1. Crops grown on the farm and source of nutrition

Vitamin A	Vitamin B	Vitamin C	Vitamin D	Vitamin E	Vitamin K	Iron
Mango, Guava	Corn, bean, Okra	Jackfruit, Mango	Mushroom	Guava, Mangos	Mangos	Spinach
Papaya	Potato, Peas, Squash	Guava	Yogurt	Papaya	Pomegranate	Peas
Amaranths,	Pumpkin, Asparagus	Amaranths	Milk	Pomegranate	Asparagus	Broccoli
Broccoli, Squash	Taro, Cabbage	Broccoli	Chicken	Pumpkin	Carrot	Eggs
Carrot, Peas	Mushroom	Green pepper		Taro	Cauliflower	Chicken
Pumpkin	Pomegranate	Yogurt		Potatoes	Cucumber	Beans
Spanish	Mango, Guava			Eggs	Okra, Peas	Lentils
Milk	Banana, Milk, Chicken				Broccoli, Cabbage	
Protein	Beans, Pea, Cowpea, Fish, Meat					
Calcium	Milk, Eggs, Yogurt, Cabbage, Okra, Cauliflower, Asparagus, Garlic, Onion, Bean					
Carbohydrate	Rice, Maize, Banana, Potatoes, Taro					

grown in the rainy season, when other vegetables grow less. In winter season, cauliflower, cabbage, tomato, carrot, spinach, radish, onion, garlic, potato, several leafy vegetables, mushroom and pea are grown and in spring season cucumber, pumpkin, squash, brinjal, bitter-gourd, asparagus, amaranths and beans cover her farm.

Her cows, goats and poultry not only provide food and nutrition but also provide the manure that has improved the structure and fertility of her soil. The livestock are also a source of income.

In this way, the combined management of crops, livestock and poultry has provided both nutrition and extra income for her family. In total, the family is easily earning an income of more than NRs. 158,000, by sales of household production, after personal consumption. With small effort, she has greatly magnified the

outcome. There are several such family farms in Nepal and Laxmi's family farm is a typical example of a well managed family farm.

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*Laxmi with her family*



Photo: Author



Photo: Jacob Zucker

*Saraswati and Surya Adhikari's biodiverse homegarden*

# Nutrition from innovation

**Roshan Mehta, Roshan Pudasaini and Jacob Zucker**

From a situation of widespread undernutrition, consuming fresh vegetables all year round has now become a reality for many Nepali households thanks to their expanding home gardens. But the stories they tell show that the benefits are not limited to improving household nutrition. Home gardens also help to empower women and conserve biodiversity; two much needed conditions for better family and community nutrition on a broader scale.

The World Health Organization reports that in Nepal, 39% of under-five's are underweight and 48% have anemia. The primary nutritional issues were identified as chronic energy deficiency in mothers, low infant birth weights, widespread childhood malnutrition, and deficiencies in Vitamin A, iron and iodine. Inadequate micronutrients are especially common in remote rural communities where dietary diversity is limited, and is a particular problem with women and children. Lack of nutritional education and resources for maintaining long term food and nutritional security contribute to these problems.

## Home gardens

Despite these serious problems, some rural communities have started to improve their food and nutritional security through investing in more genetically diverse home gardens. Various programmes are supporting this move, including a large project implemented by LI-BIRD over the past 12 years, a national NGO supported by the Swiss Agency for Development and Cooperation and Bioversity International.

Home gardens used to be a cornerstone of traditional Nepalese farming systems, but over time, they slowly began to lose their importance in people's eyes as a relic of old-fashioned customs. But now their importance is being recognised once again. A home garden is the area around a homestead where traditional and improved varieties of vegetables, fruits, fodder, herbs, spices, mushrooms and ornamental plants are grown, along with livestock, fish and bees. Production from home gardens is primarily intended for family consumption but many farmers may also produce a surplus for sale.

Nutritional calendars were developed with local people that showed the monthly gaps in nutrition for each community. Farmers were

supported with the provision of vegetable seeds and fruit saplings. They also received training on human nutrition, and on low cost sustainable home garden management techniques. The introduction and integration of goats, pigs, poultry, mushrooms, fish and bees was also promoted, to complement family nutrition and household income as well as providing agroecological benefits to the farming system as a whole.

How home gardens were developed was decided by working with farmer groups within each community. These groups are village level institutions with a legal status, but that also abide by national rules and regulations. In each home garden group, the inclusion and participation of marginalised groups based on ethnicity, gender or poverty, allowed more equitable access to the opportunities and benefits. The garden groups received support not only in specific techniques, but also in how to organize themselves, and this prepared them for long term continuation of the project activities. Groups received training and coaching on governance, accounting and finance, and building relations with service providers. They also implemented a savings and credit programme that allows the group to overcome unforeseen financial problems.

### Cultivating diversity

The tiny home garden of Surya and Saraswati Adhikari is flourishing. Situated directly in front of their house in Begnas village, Kaski district, just a few steps from the kitchen and storage areas, more than two dozen different plants can be found in the eight square metre plot. Papaya and banana trees stand tall. Below grow many local vegetable varieties, and climbing beans vines wrap themselves around edible bamboo stalks. Other medicinal,

Home gardens have also proven to be useful 'testing grounds' for some farmers, where they have experimented with new plants and practices, learnt, adapted, and then scaled up the successes on their fields.

cultural, and decorative plants such as *tulsi*, *barbari*, and *til*, help people and the community as a whole to preserve traditional knowledge and practices otherwise at risk of being forgotten.

Chemical contamination and poisoning from unregulated use of industrial pesticides by untrained farmers is a widespread problem. But Surya and Saraswati use no insecticides, herbicides or fertilizers in their garden, preferring mulches and compost to enrich the soil and natural fertilizers to promote plant growth.

Still, many farmers with home gardens struggle to maintain vegetable production during the dry season, especially in hilly areas where the availability of water is limited. To overcome this, farmers began collecting waste water in small tanks and using this to irrigate their gardens. Mr Lok Bahadur explains, "I have constructed a water tank of nearly 500 litres in my garden and I can now grow vegetables even in the dry summer." This result has been aptly described as producing 'taste from waste'.

### Women and nutrition

Women know very well the importance of home gardens for family nutrition, as they typically take responsibility for both. Which fruits and vegetables to grow, food preparation and feeding the family,

*Saraswati and Surya Adhikari in front of their home garden*



Photo: Jacob Zucker

women make critical decisions that have lasting impacts on the lives of their children and other family members. A proper understanding of the relationship between the plants grown in the family garden and the nutritional makeup of meals prepared in the kitchen is indispensable to addressing the issue of malnutrition.

Saraswati Adhikari is responsible for the family's cooking, and is fully aware that creating a proper nutritional balance in each and every dish is a delicate task of the utmost importance. Most rural families only eat two main meals a day, with white rice as the staple carbohydrate source. *Daal* is a typical Nepali dish prepared from lentils or beans, both of which are an important source of dietary iron and protein for rural communities. On days when it is not served, she prepares a stew of taro leaves or mustard greens that supplements the iron intake. Taro leaves are also a rich source of vitamins A and C, and when consumed with vegetable sources of iron and protein, significantly increase their absorption by the body. In the summer, ripe cucumber is sprinkled with iodized salt as a cooling afternoon snack, helping the family to avoid the range of disorders associated with iodine deficiency.

Saraswati carefully crafts each family meal with a wide range of fresh fruits and vegetables from her home garden. And the health benefits of such a nutritious diet are being felt. Now able to consume fresh vegetables all year round, Lok Bahadur explains, "I feel in good health compared to before. Previously, I had to travel to Kathmandu up to four times a year for medical treatment, but not any more."

### Beyond self-sufficiency

Home gardens have also added to household incomes and the nutrition of others, with surplus produce sold for cash in local markets. Home gardens have also proven to be useful 'testing grounds' for some farmers, where they have experimented with new plants and practices, learnt, adapted, and then scaled up the successes on their fields. After learning from their home gardening experiences, others have increased production to such an extent that for the first time, they have excess to sell.

Mrs Champa Chaudhary is from the indigenous Tharu community in western Nepal. She had limited access to resources and used to have practically no say in household decisions, despite her responsibilities for cooking and household tasks. A labour wage was the only source of income, and the food that she could grow was never sufficient to support her family for more than four months in any year. Champa has since improved her gardening skills, increased and diversified her production, and last year she was able to earn 5000 Nepalese Rupees (around US\$50) from selling the surplus. She proudly explains, "I do not have to spend my husband's hard earned money any more to buy expensive vegetables from the market. And now the community has also started listening to my advice on how to grow vegetables."

### Women step up

Champa is not alone in finding herself having a new social status. The development of home gardens has brought prosperity and social elevation to communities in a number of ways. Not only

have women developed their skills and knowledge about growing fruit and vegetables, rearing small livestock and linking to markets, but, many women have developed leadership skills and increased their participation in local development affairs.

In addition, regular saving and credit groups have provided a platform for women to manage their own and their family's financial resources. They now meet and discuss various issues at the community level and such increased and regular group interaction has mobilised and enhanced their leadership skills.

More than 80 home gardeners have stepped up to become their local community's 'resource home gardener', a role played by one in every 25 home gardeners. With initial technical and material support from the project, 'resource home gardeners' have become focal points for the exchange of local knowledge and seeds. Sita Bhugel, living in Kathjor, Ramechhap, once grew very few vegetables and only during the wet season. After learning from the home garden programme, she started to grow many different crops all year round. She inspired and taught many of her neighbours and became a local resource person. She has become so respected in her community that she was recently nominated to be vice president of the village level Agriculture, Forest and Environment Committee.

### An ideal approach

The maintenance and expansion of genetically diverse home garden systems is an ideal approach to ensure nutritional security for family farmers in Nepal. A wide range of fruits, vegetables, medicinal herbs and spices helps to supplement often limited family diets, and provides a host of essential micronutrients in the process. As the vast majority of rural families already maintain home gardens, although many are run down, this can build on existing local knowledge and requires minimal financial investment. The result is widespread implementation and spread of this grassroots method.

On a broader level, home gardens offer increased resilience for farming households in the face of risks brought about by climate change and the migration of many men who go off in search of off-farm employment. Women are developing their capacities to produce food, generate income and take leadership positions. They are feeding their communities while cultivating and conserving a wealth of local biodiversity – species and varieties that are better able to resist the vagaries of more frequent and severe droughts and pest and disease outbreaks.



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Photo: Helen Keller International

# Homestead food production

*Household garden in Bangladesh*

## *A strategy for reducing micronutrient malnutrition and poverty in South Asia*

**Aminuzzaman Talukder**

Improving nutritional status, including micronutrient status, can lead to increased productivity, increased child survival and growth and reduced maternal morbidity and mortality. Home gardening activities are centered on women and it can also increase the income of women, which may result in the better use of household resources and improved caring practices and empowerment. Thus, the simultaneous impact of home gardening programmes in terms of giving women a voice and promoting their full participation in domestic life can make an important contribution to the overall development of communities.

**M**icronutrient deficiency disorders are serious public health problems in South Asian countries with long term consequences. Globally, more than 250 million children in developing countries are at risk of vitamin A deficiency; more than half of these children live in South Asia. Iron deficiency affects more than 2000 million women and children and more than 1500 million people in the world are at risk of iodine deficiency. Micronutrient malnutrition is a serious public health problem in Bangladesh.

Inadequate dietary intake is an immediate cause of malnutrition and thus it seems logical that food and agriculture activities could contribute to improvements in nutrition and micronutrient status. Global availability of cereals is adequate, but substantial proportion of the population still subsists on inadequate caloric intake and child under nutrition still persists in many countries, suggesting that distribution of food is inadequate. Global availability of non

cereal foods, such as animal and horticulture foods is well below global requirement. Consequently, micronutrient deficiencies, which result mainly from inadequate intake of micronutrient rich foods, particularly animal foods, are prevalent in most parts of South Asia. Food based strategies such as home gardening, small animal husbandry, poultry and social marketing of foods, lead to better food production, food consumption, income generation and overall food security.

Several interventions are currently being implemented in Bangladesh, Nepal and other countries in South Asia to control micronutrient deficiencies. Several strategies are necessary for addressing the problem of malnutrition. One such strategy is food-based programmes to improve access and availability of plant and animal foods at the household level. There is growing evidence that food-based strategies, including homestead food production, have an impact on vitamin A deficiency and other micronutrient deficiencies. Such strategies also increase household food security. By increasing the variety of fruits and vegetables available for consumption and additional eggs, meat, liver, fish or milk, the diversity of the diet is increased; this has been shown to have positive impacts on nutritional status.

## Development of Homestead Food Production Programme in Asia- Pacific

### Initial pilot home garden programme

Helen Keller International (HKI) initiated first a pilot programme in 1990 among 1000 households to explore the existing gardening practices, feasibility of promoting low cost vegetable gardens combined with nutrition education and to identify constraints that might prevent increased production and consumption of vitamin A rich foods among poor households.

Findings from the pilot programme suggested that with technical assistance and support, households in Bangladesh could be encouraged to produce fruits and vegetables throughout the year. A mid-term evaluation in 1992 confirmed that the combined home gardening, nutrition education and gender aspects of the programme had a very positive impact on vegetable consumption among women and young children. Other findings suggested that increasing the varieties of vegetables in the garden was associated with increased vegetable and fruit intake.

### Scaling up

In 1993, Helen Keller International began a national expansion of this pilot programme working in collaboration with local nongovernmental organizations (NGOs) and government organizations (GOs) across Bangladesh. The objectives of the

There is growing evidence that food-based strategies, including homestead food production, have an impact on vitamin A deficiency and other micronutrient deficiencies.



Photo: Helen Keller International

Production village model farm

project were to increase the number of households which sustainably produce micronutrient rich vegetables and fruits round the year, increase the number of households producing more varieties (at least 6) of vegetables, and increase the frequency of consumption of vitamin A rich food by the most vulnerable groups. HKI selects its partners from local GO and NGO partners, who have ongoing development programmes, have community linkages, work with women's groups, and have strong management capability. HKI provides training and technical assistance to the agriculturists and extension agents of the partner NGOs. Based on the experience in Bangladesh, HKI started the same programme in Nepal in 1996, in Cambodia in 1998, and in the Philippines in 2004.

### Integration of animal husbandry with home garden

Recent findings suggested that the bioavailability of vitamin A from fruits and vegetables is much lower than what has been assumed. Fruits and vegetables, therefore, play a smaller role in combating vitamin A deficiency. In order to maximize the contribution of homestead food production to combat vitamin A and other micronutrient deficiencies, it is very important to increase availability and consumption of some animal foods by keeping small animals, poultry and/or fish. HKI has further expanded the home gardening programme to include other homestead food production schemes, such as poultry raising and egg production on end of 2001 in three countries, Bangladesh, Cambodia and Nepal.

### Results

Based on the existing practices, production and diversification, gardens are classified in three different categories, (a) *Traditional*: scattered, seasonal production and only growing gourd type



Photo: Helen Keller International

Woman gardener in Bangladesh

vegetables, (b) *Improved*: seasonal vegetables grown in addition to gourd types and (c) *Developed*: productive throughout the year, vegetables in addition to gourd types, on fixed land.

Changes in gardening practices were noted. There was only one household without a garden at the first round of monitoring and that by the second round of monitoring at least one-third had upgraded their gardening practices from traditional to improved or improved to developed.

The programme has increased the production and consumption of fruits, vegetables, and egg in the working areas. The production and number of varieties being produced is highest among households who practiced developed gardening. Children in households with developed gardens consumed vitamin A rich foods, such as green leafy vegetables and yellow fruits, more frequently than did children in households without a garden or with a traditional garden. The number of varieties and vegetable production was three times higher in developed gardens than in traditional gardens and children's frequency of consumption was 1.6 times higher. In Nepal, on an average, mothers and children ate 2 eggs per person per week.

### Impact and upscaling

Homestead food production has been shown to be an important way to improve the intake of micro nutrient rich foods, particularly for poor households in the South Asian Region. The pilot programme was initiated to identify ways to improve the existing homestead gardening practices. Following the development of the home gardening model, the programme was scaled up by forming partnerships with local non-government organizations. From 1993 to the present, the programme has been expanded. To date HKI has worked with more than 100 NGO partners and reached more than 900,000 households in Bangladesh, Nepal and Cambodia. Regular monitoring has demonstrated that the programme successfully increased the production and consumption of vitamin A rich foods in the target households.

Recent evaluation has shown that home gardening has improved the economic status of its beneficiaries by increasing the number of households that generate garden income and the income generated from gardening activities. On an average, 50 percent of the households earned income approximately US\$ 7 by selling fruits and vegetables and US\$ 4.5 from poultry and eggs in the last two months. This income is largely spent on food, productive assets and education, thus contributing directly and indirectly to increased accessibility of food. In addition to the direct income contribution, the project has also increased the quantity of vegetables and fruits from homestead gardens consumed by household beneficiaries, which is equivalent to US\$ 31 for three months.

Homestead gardening programme can be credited not only with improving the availability of food to households but also their ability to access quality foods. Therefore, their overall food security and more importantly, the benefits gained by households in participating in homestead gardening programme were sustained after withdrawal of the three-year long support.

### Conclusion

Homestead food production has been shown to be an important way to improve the intake of vitamin A and other micronutrient rich food, particularly for poor households in countries like Bangladesh, Nepal and Cambodia. The ways through which home gardening and poultry production increases consumption of vitamin A rich foods and contributes to improving vitamin A status are several. Food availability including the availability of animal foods, and food security are major components of poverty alleviation.

Homestead food production increases the availability of plant foods, animal foods as well as their round the year consumption. Both the increased availability as well as the increased choice of foods increases vegetable and animal foods consumption. In addition, homestead food production provides additional income for poor households, which is mainly used for purchasing foods of higher nutritional quality including animal products. The participation in the home gardening programme together with the income that the activity generates has been found to empower women. Their participation in decision-making increased and that, amongst others, had a positive impact on food preparation practices and care seeking behavior.

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# From biodiversity to dietary diversity

**Zayaan Khan**

There was a time when what we ate was really what the forest, mountain or sea had to offer, and which would differ from week to week and from season to season. Eating was as diverse as the environments that people found themselves living in.

There used to be a natural balance in the world. Indigenous people have always understood how their lives were part of a 'bigger picture', and how dietary diversity allowed for the introduction of as many sources of nutrition as possible. Coastal people might eat seaweed, mussels, abalone and urchins as well as fish. This was the time when what we ate was really what the forest, mountain or sea had to offer, and which would differ from week to week and from season to season. Eating was as diverse as the environments that people found themselves living in.

But so much has changed today. Horticultural know-how, supermarket convenience and even 'food fashions' dominate our world. These influence our choices when it comes to what we find on our plates, though the possibility of bringing back more diversity is ever present. We talk about conserving biological diversity and agrobiodiversity, but the crucial next step is surely to incorporate this into our eating habits. We need to introduce the genes of these multiple species to our own genes, and so help our bodies to adapt and evolve within our changing world. We need dietary diversity.

Last year I attended a meeting in Uganda with Slow Food International that launched the 10,000 Gardens in Africa project. We attended training courses in various small villages where the great Ankhole-Watusi longhorn cattle roam. Our meals, be it breakfast, lunch or dinner, had at least seven species per plate. Sometimes double that. Each meal was also accompanied by a local and very bitter variety of eggplant that aids digestion. And on every plate there was something to satisfy every taste.

It is important to conserve biological diversity and agrobiodiversity. But the crucial next step is surely to incorporate this into our eating habits.



Zayaan Khan

Understanding the health of the individual requires an understanding of the context of family, community and culture. How do we view health and how does nutrition fit into this? Africa is rich in heritage and full of diversity, of species, cultures, languages and recipes. These instill a sense of identity within each individual, especially important during post-colonial confusion. Yet we are now living in a time where ocean and land grabbing are huge threats, and corporate control is usurping local knowledge and giving us only 'cut and paste' solutions to our many current problems. Our identity should give us cultural pride and remind us what it is we are fighting for. We are fighting for diversity, reconnecting with our history, and fostering a new custodianship with our land.

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# Processed foods

## *A bane on health*

**B N Nandish**

**R**ice is the staple food for Asians, 70% quantity of our daily food is rice, which is the main source of energy. We consume highly polished – small -sparkling – silky-glossy white rice which contains only carbohydrates. The bran containing all the other nutrients goes to cattle feed. Polished rice gets digested faster, converts into glucose and enters our blood stream. Presently, it is the main cause for the diabetes. Similarly in wheat too. Whole wheat grain is consumed less and its by-product Maida is used for its softness, white colour and its ease to make variety of dishes. Brownish sea salt and Himalayan pink salt have been replaced by refined white salt, jaggery is replaced by refined white sugar crystals and pasteurized dairy milk has reached even our villages. All these five white products (white rice-milk- salt- maida and sugar) are the main part of our daily diet. We have compromised with nutrition just for the sake of whiteness of the product.

When an improved variety of paddy is milled into high polished rice, we get 55 kgs of rice per quintal of paddy. On the other hand, we get up to 82 kgs of rice in the case of an unpolished rice with traditional paddy variety. The difference is very clear. Just one factor like less processing will result in more nutrition, and that too for a lesser price. How we use the product is as important as how we grow or how much we grow. High end processing will

involve addition of chemicals thereby polluting the food, while increasing the cost of the food which is passed on to the consumers.

Realising these dangers there is now a slow shift towards traditional food, with traditional methods of preparation. Soaking, sprouting or fermenting of cereals, pulses is the oldest known form of food biotechnology. They cause nutritional improvements and increased availability of nutrients for absorption. In the past, most of the people ate fermented rice. Left over cooked rice was soaked in water and kept over night in a clay vessel closed with a lid. Next day morning the fermented rice mixed with butter milk, onions and pinch of salt was eaten first thing in the morning. This highly nutritious vitamin B rich fermented food quenches the acidity of the body. It supplies lots of nutrients, restores healthy intestinal flora and relieves all diseases related to stomach and intestines.

We have forgotten that food acts as a medicine. Hulled barley was used to cure kidney problems and as a body coolant. South Indian recipes like idly, vada, dosa are all fermented to cause changes in food quality indices including texture, flavor, appearance, nutrition and safety. We are under the impression that our elders were consuming leftovers to avoid food wastage. We all throw such a highly nutritious food in dustbins or serve it to beggars, labors and animals.

It is interesting to note that people living in metros have started growing plants and vegetables in terraces, balconies and on vacant sites. Today, millets have arrived on the rich man's plate and it's a good sign.

How we use the product is as important as how we grow or how much we grow.

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# Reshaping destinies

Sandeep K

The local village communities in Zaheerabad have been able to reclaim their fallowed lands and cultivate a myriad varieties of traditional landraces of food grains. They have not only been able to control their food systems that are ecosystemically evolved over thousands of years but also have adequate nutritious food for their consumption.

Zaheerabad, in Medak District, Andhra Pradesh, is a region that has traditionally fed itself on a variety of millets including sorghum, pearl millet, foxtail millet, little millet and so on. However, the introduction of cheap rice under PDS weaned many people away from their traditional food grains; after all, rice was easy to cook, and absolutely devoid of any fuss. Many women considered it to be a great blessing. However, it was only much later that the full implications of this shift in the food habits became clear.

These communities began noticing a marked decline in their nutrition. Rice offered a load of carbohydrates, but very little protein and other nutrients such as iron, calcium, minerals, fibre etc. But the hard-working bodies of the farmers demanded a high amount of proteins and other nutrients, which their traditional millets and other food grains were capable of supplying.

Because PDS (Public Distribution System) rice was available easily and at a very cheap price [one day of wages could now buy three months ration!], many farmers started leaving their fields fallow because keeping them productive meant hard toil. Gradually, the traditional landraces that had sustained these communities for generations started to decline. The complete 'de-milletisation' of their communities seemed a *fait accompli*; but the women who took a wider view of their food and farming, decided to fight the situation.

## The first move

The first step these women took, in this fight, was to bring fallow land back under cultivation. By breathing new life into these lands and by cultivating a variety of crops, they would re-establish autonomy over their agriculture. The women approached Deccan Development Society, and thence the Ministry of Rural Development; which saw merit in their initiative and agreed to support the formation of community grain banks. Support to the tune of Rs.2600 per acre was extended to the women, and the initiative was launched in 30 villages; with 100 acres of fallow



Photo: DDS

Permangari Narsamma in her millet field

land being brought under cultivation in each village. Most of these lands were owned by marginal and small landholders. The effort was undertaken *with* the farmers in a partnership mode. This meant that the farmers – especially women farmers – were involved at every stage of planning and implementing the intervention.

In each of the 30 villages, extensive consultations were held with the farmers to chalk out the best course forward. This was followed by participatory exercises wherein the women identified the fallow lands, mapped the soils on these lands and other relevant details. Following these exercises, the idea of a decentralized public distribution system was placed in front of the communities; it was immediately evident that the idea kindled hope in their minds. It thus became all the more imperative that this PDS was fashioned in a participatory manner, led by farmers, and with utmost transparency. It was decided that the DDS Sanghams would advance the money required for ploughing, weeding, applying manure and for other activities aimed at reclaiming the lands. During the participatory exercises, the communities further stated that they would rather use farm yard manure which ensured that the lands remained fertile for as long as three years, instead of chemical fertilizers which helped the lands only for a year or so; and which in the long run destroyed their soils.

Similarly, the communities identified various challenges that they would face in their bid to reclaim the fallow lands. So were the

PDS rice was available easily and at a very cheap price. Many farmers started leaving their fields fallow because keeping them productive meant hard toil.

solutions, and the means needed to surmount these challenges. The estimates [in 1994 when this initiative began] to reclaim an acre of fallow worked out to Rs.2700/- Following these consultations, the Sanghams released money as a loan to the identified farmers, for the purpose of fallow land reclamation. It was further decided that instead of repaying the loan in the form of cash, the farmers would repay it in the shape of grains. As it was difficult to get high yields right from the first year, it was decided that the repayment would be made in an incremental manner. For example, in the first year, the farmer would pay 100 kgs of jowar [sorghum] while 200 kgs would be repaid in the second year, and so on. These arrangements had the total approval of all farmers and were embedded in agreements that were drafted through mutual consultations and agreement.

Committees of women were formed in each village and were made responsible for the oversight of this initiative. Each woman was entrusted with 20 acres of land to oversee personally. In the very first season, more than 2500 acres of fallow lands were brought back under cultivation and more than 800,000 kilograms of sorghum was produced. This translated into three million additional meals in the 30 participating villages, or 1000 additional meals for each participating household. The fodder generated from this initiative could support 6000 additional heads of cattle in the 30 villages where it was implemented. During the first season, the total grain collected in the form of repayment amounted to 10,000-15,000 kilograms in each village; enough to feed 100 households in each of them. This set off the process of identifying the 100 'poor' households in each village, which was nothing short of fascinating.

### Poor access nutritious food

In an unprecedented move, dalit women, and those from the most backward social and economic backgrounds within the village were invited to identify who among them were then poorest and the most deserving of the support that was to be extended in the form of food grains. An array of highly sophisticated and sensitive criteria were laid down by these women to define poverty itself and those households who can be identified as poor in their respective villages. In a participatory wealth ranking exercise where the entire village community participated these criteria were discussed and approved by the entire community. For example, a set of people, aged and without support were designated as destitutes and the maximum grain support was committed to them. The hard core poor were those who had no land and had to do daily labour to earn their meal for the day. Those who owned only one acre of land, had no draught animals and no irrigation, were identified as poor. Similarly, if a couple had a number of small children who were not in a position to work, they were also considered as poor. People who had outmigrated due to survival difficulties were not eliminated. Single women and their households were top among the categories of poor.

Following this, each household was issued a ration card. This entitled the family a fixed quota of sorghum during six months of the year, when food and work were scarce and the poor struggled the most. In this way, the APDS (Alternative Public Distribution

System) plugged the critical gap in the poor households' ability to access nutritious, eco systemically adopted local food.

### Scaling up

The initiative that started in 1994 had, by 2003 expanded to include 3600 acres spanning 51 villages, and helps the designated households therein eat for up to six months if need be. Subsequently, the APDS spread to other villages within the district and to other parts of the state and the country. As on date, 79 villages in Medak and 46 outside of Medak are covered by this initiative on nearly 7000 acres and supporting close to 6000 farming households. Together, these lands produce more than 2 million kilograms of food grains and have succeeded in generating about 350,000 person-days of employment in these villages. In all, the APDS is servicing more than 11,000 consumer households comprising of more than 60,000 people and has been successful in providing more than 2.7 million extra meals every season.

The sale proceeds are deposited by each village in their own Community Grain Fund, and are used to bring more and more fallow lands under cultivation; and for other land development activities. This ensures that the food security net spreads wider and wider with each passing year. The program entailed only a one-time investment from the government, following which the entire initiative was taken over by the communities themselves; and since the entire program was planned and implemented with the active participation of the communities involved therein. That this task was managed by groups of dalit women, non-literate and marginalized, who have never been allowed to manage anything in their lives, is the most emphatic socio-political statement made by these women.

Acknowledging these efforts, the Planning Commission has recommended that millets be made a part of the public distribution system. Further, the women who spearheaded this initiative have been recognized at various national and international forums, as having conquered hunger.

Thanks to the efforts of these women, the NBSAP, National Biodiversity Strategy and Action Plan-2009 of India, made a strong argument for reorienting the public distribution system towards *the use of agro-biodiversity, linking it to food, nutritional and livelihood security; in particular, focus on producing and distributing local food grains through the PDS [thereby providing incentives for revival or continuation of agrobiodiverse farming], and decentralise controls over the system to women's committees.* All these have come as huge endorsements for the efforts that these women have been putting, in their struggle for food sovereignty.

*(Sandeep K was earlier associated with Deccan Development Society as Program Manager.)*

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## 2014 Global Nutrition Report

### Actions and Accountability to Accelerate the World's Progress on Nutrition

Heidi Fritschel, Terra Carter, John Whitehead, and Andrew Marble (Eds.), 2014, *International Food Policy Research Institute*, ISBN: 978-0-89629-564-3

Malnutrition affects one in two people on the planet. Of these, 165 million children under the age of five are estimated to be stunted (i.e. low height for age). Two billion people are estimated to be deficient in one or more micronutrients. Nearly 1.5 billion people are estimated to be overweight and over 500 million to be obese. These conditions all have severe consequences for survival, for morbidity, and for the ability of individuals, the economy and society to thrive. In relation to the scale that these problems imply, the allocation of public resources to their prevention and amelioration is minuscule. Resources to specific nutrition programmes amount to a small fraction of one per cent of domestic or aid budgets.

The Global Nutrition Report will convene existing processes, highlight progress in combating malnutrition and identify gaps and propose ways to fill them. Through this, the Report will help to guide action, build accountability and spark increased commitment for further progress towards reducing malnutrition much faster.

At its core, the Report aims to empower nutrition champions at the national level to better inform policy decisions and to strengthen the case for increased resources. A repository of global and country-level nutrition data and analysis, the Report will also provide civil society organisations (CSOs), donors, governments, the business sector, researchers, the media and engaged citizens with evidence of the current scale of malnutrition, the measures being taken to combat it, as well as highlighting what more needs to be done.

## Networks for Resilience

### The Role of Social Capital

Quinn Bernier and Ruth Meinzen-Dick, 2014, *International Food Policy Research Institute., Washington, DC*, ISBN: 978-0-89629-567-4



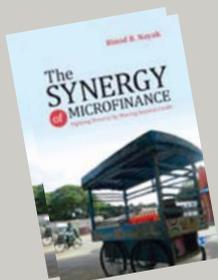
This report investigates the under-explored role that local forms of social capital, in particular local organizations and social networks, play in enhancing resilience. The case studies used are of Ethiopian funeral societies and Filipino migrant networks.

Local social capital systems can play a positive role in individual, household, and community risk-smoothing and risk-sharing practices by providing bonding, bridging, and linking capital that allow people to better cope, adapt, and transform. Impact is context specific, however, and can vary in the strength and the social group or groups covered. Community groups are also generally much more effective in dealing with shocks that affect individual members rather than many in the group, but face challenges when mobilizing resources that are outside of communities.

## The Synergy of Microfinance

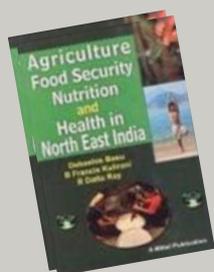
### Fighting Poverty by Moving beyond Credit

Binod B. Nayak, December 2014, *SAGE Publications Pvt. Ltd.*, 372 pages ISBN: 9789351500421



The Synergy of Microfinance underlines the significance of innovative financial and risk management tools and non-financial complementary services by microfinance institutions in poverty alleviation. It undertakes a nuanced analysis of financial instruments— microcredit, microsavings, microinsurance, microleasing and payment systems for money transfer— and non-financial services such as social intermediation, livelihood promotion and access to broader market place.

Given the diminished expectations on microcredit impact, the book highlights results from randomized control trial (RCT)-based studies around the world. It argues that exclusive access to microcredit alone may not suffice in alleviating poverty on a mass scale and could pose a financial risk for poor households or households that over-borrow. There is also a discussion on the Andhra Pradesh microfinance crisis of 2010, and the developments that took place in its aftermath.



## Agriculture Food Security Nutrition and Health in North East India

Debashis, B. Francis Kulirani and B. Datta Ray Basu, 2006, *Mittal Publications*; ISBN-10: 8170999758, ISBN-13: 978-8170999751

According to current statistics and estimates, approximately 36 per cent of the people of North-East India are below the poverty level. In Meghalaya, for instance, 50 per cent of the households are below the poverty level. This, according to the editors of this volume, implies that those who live below poverty level are unable to buy enough food, in almost all the states of North-East India the availability of all the food items taken together are much below the standard as recommended for a healthy life. The immediate objective of policy makers and official agencies is, thus to make standard food available to the people. Unfortunately, this remains uncertain in North-East India, and the situation is alarming. A natural corollary of this situation is widespread nutrition deficiency and at least 250 million people in India suffer from varying degrees of malnutrition: out of 100 deaths in rural India, 58 are of children and seven million children are affected by blindness because of nutrition deficiency. The picture of North-East India is dismal in this context. In view of the above state of affairs the public distribution system has an important role which has, so far, failed to reach the target groups in the countryside. This volume contains 37 papers from eminent experts on aspects of public distribution system, the overall agricultural scenario, food security, nutritional security and the related population and health issues in different parts of North-East India. Some case studies of various constituents of the region throw adequate light on the existing conditions and are useful in finding solutions to the very acute problems in North-East India in the context of the issues covered by this comprehensive book.

## Plants in Human Health and Nutrition Policy

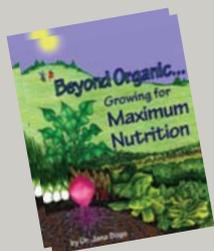
Simopoulos A.P., Gopalan C. (Eds), 2003, *World Review of Nutrition and Dietetics*, Vol. 91, XIV, 138 p., ISBN: 978-3-8055-7554-6, e-ISBN: 978-3-318-00954-5



The present volume includes a series of studies on edible wild plants and their impact on human health. Today the diet of developed societies is limited to a few cultivated vegetables while the developing countries often lack an adequate supply of micronutrients. Wild plants contain antioxidant, omega-3 fatty acid and micronutrient components that contribute to both a decrease in the risk for chronic diseases as well as the reduction of nutritional deficiencies. Thus they address many diet-related problems at both ends of the socio-economic spectrum. Results from research provide data on the composition of indigenous plants from various areas of the world and show that consumption of green leafy vegetables corrects deficiencies successfully. The book also deals with nutrition policy integrating indigenous foods against micronutrient deficiency. Implementation of scientific evidence is an essential precondition for improving nutrition policy. Nutritionists, food producers, botanists, agronomists, food technologists, pharmacologists as well as all professionals involved with food policy and human development will find in this book a valuable and updated basis for their work.

## Beyond Organic... Growing for Maximum Nutrition [Kindle Edition]

Dr. Jana Bogs (Author), Dr. A. Frederick Kennedy (Illustrator), December 14, 2013, [www.amazon.com](http://www.amazon.com), 142 pages, Rs.399.00



Our foods have lost up to 70% of some nutrients in the last 70 years. This loss of nutrition may explain, at least in part, our increasing health concerns. Whatever your goals and dreams in life, all will be more easily achieved when your body and mind receive the best nutrition from optimally-grown foods.

Learn how the Beyond Organic Growing System (BOGS) can produce Nutrition Grown foods, with many times the nutrient content of typical produce. See independent, third-party laboratory analyzed comparisons of Nutrition Grown foods vs. USDA food nutrient database listings. This book also brings you cutting edge research on how fruit growing methods can effect blood glucose levels in humans.

Plants must receive the optimal nutrition they need to be able to express their full potentials to create large arrays of health-giving phytonutrients. In turn, people and animals who eat these Nutrition Grown plants receive the phytonutrients they need to help them express their full potentials.

“The cure just might be in the garden – the Nutrition Grown garden!”

# Towards stronger family farms

## *Recommendations from the International Year of Family Farming*

**Janneke Bruil**

Improving the situation of family farmers is a burning need, and as they produce an estimated 70% of the world's food, it is an issue that affects us all. The 2014 International Year of Family Farming aimed to create a better understanding of family farming and support the development of pro-family farming policies. This article highlights some of the key proposals made during the year.

When 2014 was proclaimed the International Year of Family Farming (IYFF), the United Nations shone a spotlight on the essential contributions of family farmers to food security, community well being, the economy, conservation, biodiversity, sustainable resource use, and climate resilience.

However, the trend in recent decades has been for governments to focus on agricultural commodities and free markets, while the majority of the world's 500 million farming families lack the investments and policies that would allow them to grow. Family farmers and their organisations are often excluded from decision making processes, and they are finding it increasingly difficult to access land to farm and the resources to be able to so, including local seeds and breeds. Combined with climate change, this leads to increased rural poverty, chronic hunger, resource degradation, and an unprecedented outflow of people to urban area, especially the young.

Throughout the International Year of Family Farming, specific policy recommendations and best practices were proposed, collated

*"Africa can feed itself because we have enough arable land and fresh water. What is lacking is the commitment of our governments to work hand-in-hand with all stakeholders. The voices of food producers are crucial." Elisabeth Atangana of the Pan African Farmer Organization, 2014*

from many rich debates into nine highlighted areas that indicate the major issues affecting family farmers.

### **1. Cross-sectoral approaches**

Discussions on family farming should also address urbanisation, rural infrastructure, traditional and indigenous knowledge and culture, education and support services, and youth development. A cross-sectoral and territorial approach was emphasised, such as in integrated rural development programmes. Diversified agroecological practices that use local knowledge should be promoted as the basis for climate resilience, and the importance of expanding income opportunities in rural areas were also highlighted, including off farm income and agritourism.

### **2. Agrarian reform**

Repeated demands were made for genuine agrarian, aquatic, forestry and pastureland reform, to reduce urban migration and incorporate the right of access to land, water and irrigation, infrastructure, education, health and marketing, including for women. This included the exemption of small scale family farmers from policies designed for larger industrial farms. FAO was requested to ensure that the Principles for Responsible Agricultural Investment protect the rights of small food producers because of their central role in food production and because, together, they invest more in agricultural development than any multinational. Promoting food sovereignty was raised as a means to strengthen family farming and eradicate hunger and poverty, and FAO was asked to promote a broad, inclusive and dynamic analysis of the concept of food sovereignty.

### **3. Access to natural resources and implementation of the Voluntary Guidelines**

Improving access to land and water should be prioritised through special land use and water management programmes. The right of farmers to produce, reproduce, exchange and sell their seeds must be protected, because *"without land, water and seeds, no peasant family farming is possible"*. Land grabbing was condemned, and there was a call for a moratorium on industrial agrofuel production. Overwhelming worldwide support was expressed for governments to implement the Voluntary Guidelines on Responsible Governance of Tenure of Land, Fisheries and Forests, considered as the best way to guarantee access to natural resources for small scale family farmers, especially women, youth and indigenous peoples.

#### 4. Improving trade and building markets

Trade agreements and trade policies should be reformed or reconsidered, in order to better serve family farmers. Governments and other actors must guarantee the human, economic, social and cultural rights of small scale family farmers and food workers, and strengthen their access to markets and ensure fair prices, for example through the promotion of local markets, public purchasing from family farmers, and improved storage and transport. The value of food from family farming can be enhanced by establishing rules of origin, creating specific family farming labels, and providing information on its nutritional and health value.

#### 5. Access to credit and finance

All regions recommended improving access of family farmers to reliable and stable financing, such as simplified lending procedures, insurance facilities to reduce risks, and the development of farmer-centred financial institutions.

#### 6. Gender equity

Specific programmes are needed to empower women farmers, facilitating their participation in decision making and their equitable participation in flexible rural labour markets. Positive discrimination for women is essential, especially regarding access to natural resources and capital.

#### 7. Stronger farmer organisations

The importance of producer organisations was emphasised, to balance the economic and political power of other actors, and to consolidate the voice of family farmers in policy making processes. Key areas were the need for governments to include farmer organisations in dialogue and decision making, capacity building programmes that are *'family farmer-centred, owned and led'*, climate change adaptation and value addition. Proposed activities included education and training programmes, and sharing experiences between organisations.

#### 8. Farmer-led research and extension

Innovative research and extension must put farmers at the centre and strengthen their own efforts, particularly as they are being most affected by, and are actively adapting to, impacts of climate change.

*"We want to uplift the conditions of family farmers so that they can have real dignity and be proud to be family farmers... and that the young generation will continue to go to family farming, and thereby reduce poverty and increase food security and nutrition."*

Esther Penunia of the Asian Farmers Association, 2014

#### A synthesis of recommendations

Throughout 2014, regional dialogues, civil society consultations, regional conferences and other events explored issues related to family farming. Many of these were (co-)organised by the Food and Agriculture Organization of the United Nations, the lead agency for the International Year of Family Farming. Across the regions, a set of key, common building blocks were identified to better support family farmers, raised by representatives of farmer organisations, governments, academia, international institutions and NGOs, amongst others. These are summarised in this article, adapted from 'Towards stronger family farms' (ILEIA/FAO, 2014).

#### 9. Attracting youth

The participation of youth in agriculture should be enhanced in all possible ways, as *"the generation and gender gaps are the biggest threats to family farming."* Vocational training should be better geared towards agriculture and the needs of rural youth. Policies could support youth access to productive resources, especially land and finance. A holistic view of young people's needs is required, and policies must ensure the right of young people to live their lives in their own territory.

#### ... and after the International Year of Family Farming?

It is clear that the visibility and recognition of family farmers has taken a leap forward this year, including many signs of greater political commitment to support family farmers and to create pro-family farming policies. The farmers themselves, women, men and youth, have been able to articulate their perspectives and their aspirations, but there remain areas of great concern, so these empowering processes must continue.

We can only truly celebrate the power of family farmers when we can also guarantee their rights, and when the political, economic and cultural space is created for them to use their strength and choose their own development pathways. For this, the IYFF has generated many solid, proven approaches. As stated in one civil society declaration: *"the IYFF should be the beginning of a longer process that strengthens non-patriarchal, indigenous and peasant family farming. We are part of the solution"*.

*This article is based on the publication 'Towards stronger family farms. Voices in the International Year of Family Farming' published by ILEIA, in collaboration with the Food and Agriculture Organization of the United Nations (October 2014).*

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