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LEISA INDIA

Magazine on Low External Input Sustainable Agriculture

Regional food systems

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COVER PHOTO
Bajra, the millet crop of Raichur meets the food needs of the household.
Photo: S Jayaraj

The AgriCultures Network

ILEIA is a member of the AgriCultures Network (www.theagriculturesnetwork.org). Farming Matters is published quarterly by ILEIA. Eight organizations of the AgriCultures Network that provide information on small-scale, sustainable agriculture worldwide, and publish are:

LEISA Revista de Agroecología (Latin America), LEISA India (in English), SALAM Majalah Pertanian Berkelanjutan (Indonesia), Agridape (West Africa, in French), Agriculturas, Experiências em Agroecologia (Brazil), LEISA China (China) and Kilimo Endelevu Africa (East Africa, in English).

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

The editors encourage readers to photocopy and circulate magazine articles.

Dear Readers

Local food systems are once again gaining attention, both at the national as well as the global level, not just for the several benefits it can offer, but for the growing realisation that it is the only way for the survival of the planet. Several problems that our country is facing today – food insecurity, rising food prices, hunger, malnutrition, loss of biodiversity, is firmly rooted in the way we produce and consume our food. It's time to rethink, reeducate, and regrow our food system, which is healthy and sustainable. There are a number of practical solutions already available. In this issue, we have made an attempt to present some of them through field experiences where local communities have built a sustainable local systems of food production and consumption.

We once again are grateful to all those who are voluntarily supporting the magazine and the movement. We repeat that owing to funding constraints, we may not be able to share the print copy of LEISA India free of cost, beyond the current issue. We would like to inform you that the contributions made to LEISA India are exempted under 80CC of Income Tax regulations. Kindly avail this opportunity and donate generously.

We would still like to reach all those who cannot afford to pay through an electronic copy. But you need to confirm to be able to receive it. For details on this aspect, see the insert enclosed in this issue.

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.

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.
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ILEIA - the Centre for Learning on sustainable agriculture and the secretariat of the global AgriCultures network promotes exchange of information for small-scale farmers in the South through identifying promising technologies involving no or only marginal external inputs, but building on local knowledge and traditional technologies and the involvement of the farmers themselves in development. Information about these technologies is exchanged mainly through Farming Matters magazine (www.theagriculturesnetwork.org).

How will we stop Hunger? Local efforts or global systems?

P V Satheesh **7**

Local food systems culturally integral to the local communities enhance community health and nutrition while abolishing hunger. While doing so, it encourages ecological farming conserving the local ecosystems. Most importantly it helps the marginalized communities in rediscovering their lost dignity. One can get ample lessons about the inevitability of following local food systems in preference to global systems from the dalit women in Andhra Pradesh.

Supporting locally determined food systems: The role of local organizations in farming, environment and people's access to food

Michel Pimbert **12**

Localized food systems provide the foundations of people's nutrition, incomes, economies and culture throughout the world. Locally determined approaches and organizations play critical roles in sustaining farming, environment and people's access to food. In order to alleviate hunger and protect environment, local organizations should be centrally involved in managing and governing local food systems.

Promoting a diverse food culture through people's initiatives: Campaign on food sovereignty in Mayurbhanj

Seema Prasanth **16**

Believing that people have knowledge, giving due recognition to that knowledge, creating platforms to share and strengthening their capacities is what DULAL has supported by facilitating a people-centered development process. Farmers with renewed confidence are going back to their traditional systems of farming ensuring food and nutrition security for the households. Empowered farmers, today, are in a position to lead campaigns, meetings, rallies and food festivals promoting the establishment of sustainable food production systems.

Regional seed systems in the Malnad: Preserving food security the traditional way

Tuula Rebhahn **21**

Around the world, agribusiness pulls in profit by controlling access to seed, severely limiting the number of varieties sold, and patenting certain genetically modified seeds – all while claiming to improve food security. Meanwhile, a decentralized but powerful force has been working to make seeds freely available to anyone who can grow them, encourage crop diversity and allow nature to do its work of multiplying the number of seeds available with each harvest. Through the simple act of saving and exchanging seeds, the Malnad women are doing the real work of securing food for the generations to come.

CONTENTS

Vol. 13 no. 3, September 2011

Including Selections from International Edition

4 **Editorial**

7 **How will we stop Hunger? Local efforts or global systems?**
P V Satheesh

12 **Supporting locally determined food systems: The role of local organizations in farming, environment and people's access to food**
Michel Pimbert

16 **Promoting a diverse food culture through people's initiatives: Campaign on food sovereignty in Mayurbhanj**
Seema Prasanth

19 **Regional Food Systems: Ensuring food security and genetic diversity**
Suman Sahai

21 **Regional seed systems in the Malnad: Preserving food security the traditional way**
Tuula Rebhahn

23 **Challenges of moving towards a food sovereignty perspective: A realistic vision or flight of fancy?**
Siddhartha

27 **Bringing back millets into food systems**
Vijay Jardari

28 **Village level gene seed grain bank: An initiative to promote sustainable food and nutrition security**
Alok Kumar Badoghar

30 **The Narayana Reddy Column**
Go local – reduce food miles

31 **New Books**

32 **Sources**

33 **Food wastage – A social evil and a criminal act!**
V Rajagopal

34 **Seeds of empowerment**
Biswamohan

Regional food systems

The food production system is under intense pressure. Ecological degradation, population growth, food shortages, climate change, declining productivity, commodity and commercial approach, changing consumption patterns etc., have all resulted in a change, not only in terms of what we produce but also the way we produce food. The warning signs are clear – stagnant food production, growing food insecurity, rising food prices, increased vulnerability of the poor, growing malnutrition among the poor, especially the women and children.

Around 80 percent of hungry people are thought to live in rural areas, where most of them work as small-scale food producers: farmers, herders, fishers, or labourers. The food insecurity in India is at an alarming situation reflected by a recent study by the International Food Policy Research Institute (IFPRI). India is among 29 countries with the highest levels of hunger, stunted children and poorly fed women, according to the International Food Policy Research Institute (IFPRI)'s "Global Hunger Index 2010". Despite a strong economy, India ranked 67th among 85 countries in terms of access to food. The report points to widespread hunger in a country that is the world's largest producer of milk and edible oils, and the second-largest producer of wheat and sugar. The country has a high "hunger score" of 24.1. Even economically developed states like Gujarat, Maharashtra, Andhra Pradesh and Karnataka find themselves in the category of high food insecurity. This reflects the enormity of the agrarian crisis and its consequent negative impact on the health and well-being of the rural communities.

Need for local food systems

Traditionally, Indian farmers have been growing food that is locally acceptable, adopting a system which relied on local resources. Much of this food was consumed at the household level and small surpluses sold in the local markets. The systems represented economies which were local, robust and self sufficient which evolved over generations.

In such local systems, each link in the food chain offers economic niches for many more people – as millers, carpenters, iron workers and mechanics, local milk processors, bakers, small shopkeepers and owners of food outlets, for example. The livelihoods and incomes of a huge number of rural and urban dwellers are thus dependent on the local manufacture of farm inputs and on the local storage, processing, distribution, sale and preparation of food. Even in affluent Western countries such as the USA and the UK, there is strong evidence that localized food systems generate many jobs and help sustain small and medium sized enterprises.

But today, the situation is different. Farming is no longer a family pursuit. It has become more and more dependent on external inputs. Farmers no longer use the seed they produce and the manure they prepare. Corporations exercise enormous power at the 'input' end of the food chain: the production of seeds and agrochemicals. Globally, four firms – Dupont, Monsanto, Syngenta, and Limagrain – dominate over 50 per cent of seed industry sales, while six firms control 75 per cent of agrochemicals. Small-scale farmers' technology needs are ignored, despite the fact that they represent the biggest opportunity to increase production and combat hunger.

But, there is huge untapped potential for improved crop production in small-scale agriculture. With the right kind of investment this potential can be realized. We have several such examples in this issue, which showcase that local systems are sustainable providing multiple benefits to the people and the planet.

Adaptive ecosystem management for meeting food demands

Agriculture faces a daunting challenge. It must dramatically increase food production and most of it has to come from the rainfed regions which occupy around 60% of the cultivated area and have received little attention from development view point. It is a well known fact that increasing fertilizer use offers ever diminishing returns leading to serious environmental consequences. The results are already evident for us to see. Therefore, food increases should come along with a transformation in the way in which food is produced.

Farmers have creative ways to adapt to given situations. Pressures on land and water can be reduced through new practices and techniques that boost yields, use soils and water more sensibly, and reduce their reliance on inputs – techniques such as drip-feed irrigation, water harvesting, agroforestry, intercropping, and the use of organic manures. Many use intercropping methods that combine trees and other plants in a manner that takes advantage of natural ecological niches. Others apply brilliantly simple low-tech solutions reducing drudgery as well as the carbon footprint of agriculture.

Many farmers have totally "brought back" the traditional farming systems and are offering live labs for others to observe. Tribal farmers in Orissa (Seema Prasanth, p.16) started cultivating different crop varieties on a single land adopting mixed cropping and rotational cropping methods. For instance, one farmer in the Kusumi block managed to grow 92 varieties of crops on his 1.5 acres of land!

Agricultural biodiversity for sustainable food systems

Nurturing agricultural biodiversity by farmers and their communities is increasingly seen as a prerequisite for sustaining food systems, livelihoods and environments. Farm biodiversity not only provides an insurance against risk. It is also essential in providing adequate, nutritious and culturally appropriate food, as people cannot live healthy, eating only a few types of cereals. It is genetic diversity that allows regional food systems to be productive, even in times of ecological stress. The richness in the genetic diversity of crops means an agro-ecosystem that is hardier and more resilient to biotic and abiotic stresses such as pests or climate variation.(Suman Sahai, p.19)

According to UNDP Human Development Report, 2002, "global corporations can have enormous impact on human rights - in their employment practices, in their environmental impact, in their support for corrupt regimes or in their advocacy for policy changes". Today, the top 200 corporations control around a quarter of the world's total productive assets. Many TNCs have revenues far exceeding the revenues of the Governments of the countries in which they are operating. Concentration has produced huge transnational corporations that monopolize the whole food distribution chain, narrowing choices for farmers and consumers. Just 10 corporations (which include Aventis, Monsanto, Pioneer and Syngenta) control one-third of the US$ 23 billion commercial seed market and 80 per cent of the US$ 28 billion global pesticide market. Monsanto alone controls 91 per cent of the global market for genetically modified seed. Another 10 corporations, including Cargill, control 57 per cent of the total sales of the world's leading 30 retailers and account for 37 per cent of the revenues earned by the world's top 100 food and beverage companies

Source: United Nations Economic and Social Council, Jean Ziegler, "The right to food", Report of the Special Rapporteur on the right to food, 2006.

Shrinking seed diversity has been an issue of concern as it forms the foundation for the farm biodiversity. Small scale farmers who have been the custodians of the seed wealth of the nation, over years, lost access to this diversity. For instance, the women in Zaheerabad in Andhra Pradesh were using over 100 varieties of various seeds [millets, pulses, oilseeds] in mid '60s. But by mid '80s this number had shrunk to less than 25 varieties.(P V Satheesh, p.7)

Local communities have been multiplying the seeds of their choice to increase the stock of seeds with the desirable qualities. Communities select the seeds through participatory exercises like seed mapping and seed selection (Biswamohan, p.34). These exercises have resulted in bringing back a number of traditional varieties back into cultivation. For instance, through these efforts, around 155 farmers in Orissa started cultivating several varieties of millets like Jowar, Khado, Gundulu, Mandia, and Kheri that had not been cultivated for over 20 years. (Seema Prasanth, p.16)

Photo: DDS

Nurturing biodiversity in farming

Setting up seed - grain banks at the village level has been one of the important methods adopted by communities to overcome the problem of seed and grain shortages when they are required. Such decentralized system where villagers themselves plan, manage and undertake all stages of food production, storage, distribution and management are found to be more sustainable in providing food security at local level. For instance, DDS sanghams started a ***Community Gene Fund*** in 1997. The tribal farmers in Koraput region also started a village level seed-grain-gene bank with the support of MSSRF and were recognized for their efforts through the Equator Initiative Award which they received at World Summit on Sustainable Development in August 2002.

Facilitating knowledge exchanges

Building sustainable local food systems is not easy. There are no easy and simple solutions that can be provided from outside. Local knowledge on seed, production methods, processing and food preparation can be strengthened when farmers and consumers have enough opportunities to interact and learn from each other. It is important that the change agents play a facilitative role in enabling this to happen. Seed melas, seed campaigns and food festivals are some of them.

Vanastree an NGO in Malnad region in Karnataka has been organising seed melas, roughly every two years for the past decade. Around 400 women farmers exchange seeds and display the diversity of crop resources they have. (Tuula Rebhahn, p.21)

Exchanges are necessary for building up demand for the local food. Growing local food addresses only the supply side of the problem. To be sustainable, it is necessary that it is matched with the consumer demand too. Demand for local food can come only when people are aware, not only about the nutritional aspect of the food but also as to how to process and prepare tasty cuisines from them. As local communities have lost the knowledge on local foods, it is necessary that opportunities are created for building awareness as well as developing skills in food preparation. DULAL, an NGO, in Orissa has facilitated celebrating food festivals. A farmer getting a good harvest of millets organises a food festival in which many different dishes made from millets are prepared and served to the villagers. The food festivals have revived the celebrations of these customs with new vigour in these tribal villages.(Seema Prasanth, p.16)

People-friendly policies

In India, government support for food security is broad. The national government has about 20 schemes in place to tackle food insecurity and malnutrition. They include longstanding schemes such as the Integrated Child Development Service (ICDS), which has been in place since 1975 and recent initiatives such as the

National Food Security Mission, launched in 2007, which aims to increase crop productivity, and the National Rural Employment Guarantee Act (NREGA) of 2005, which offers rural households a minimum of 100 days of guaranteed employment per year. There is critical attention to food access in all three cases, particularly through in-kind and in-cash transfers, as well as public works. However, in the absence of formal national food security strategy these programmes and actions exist in various public sectors limiting their effectiveness. According to ACTION AID's Hunger Report Card, 'Effective implementation of these interventions, holds the key to reducing hunger'.

Policies have a profound influence on the livelihoods security, agricultural biodiversity and the very fabric of local food systems and economies. Small farmers and rural people harbor considerable concerns over the possible impacts and it is important that they be involved in shaping up policies. 'Prajateerpu' is a fine example to show as to how it was devised as a means of allowing those people most likely to be affected by Vision 2020 to shape a vision of their own. Vision 2020 is a document prepared by Andhra Pradesh government which proposed to consolidate small farms and rapidly increase mechanisation and modernisation, introduce enhancing technologies such as genetic modification in farming and food processing and reducing the number of people on the land from 70% to 40% by 2020. (Pimbert, p.12)

Building local food systems

It's time to rethink, reeducate, and regrow our food system. There are many ways in which the broken local food systems can be rebuilt. Encourage farms that are small, diverse and committed to growing foods for the local market like grains, millets and legumes. Reduce commodity crop approach for small farms. Implement farmer supportive policies that encourage local food production. Educate the urban consumers about what healthy food actually is, and how to prepare it. Educate the rich to stop food wastage.

There are already groups of people at the grass roots, empowering people to make agriculture less environmentally harmful and to take back control over the food they produce. The field experiences indicate that the system of small-scale traditional farming is remarkably stable. This food system may not be perfect, but it's almost completely local. As a result, it's also much more sustainable than the globalized, nutrition-poor diet that is prevalent and promoted by extravagant publicity and support.

Practical solutions are many and available. They are good for people and to the planet. Their benefits can be shared by the many, not just the few. They are built to be resilient in the long run.

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GREENING THE ECONOMY WITH AGRICULTURE (GEA)

Taking stock of potential, options and prospective challenges

Considering the importance of agriculture, forestry and fisheries in alleviating poverty and the great impact of its management on natural resources, this sector cannot be but an essential part of any green economy strategy. The cost-effectiveness of greening agriculture is likely to be far higher than a similar effort in other sectors and could, at the same time, help alleviate poverty and hunger, improve human health and nutrition and lower adverse ecological impacts and greenhouse gas emissions. Greening the economy with agriculture requires a dual effort in increasing food and agriculture productivity, while improving both ecological and economic efficiency in the use of resources throughout the food chain: from the resources used and recycled during production, through waste minimization during post-harvest handling, processing, retailing and consumption, to distributional equity and fair trading.

FAO is currently investigating the potential and constraints of the food and agriculture sector under a green economy framework by examining the different links with food security dimensions, including food availability, access, stability and utilization. The overall objective of the Greening the Economy with Agriculture (GEA) Initiative is to contribute to the definition and implementation of the green economy in the context of sustainable development, food security and poverty alleviation through the mobilization of the food and agriculture sector.

An FAO/OECD expert meeting on Greening the Economy with agriculture was organized in Paris during -7 September 2011. This Expert Meeting is being convened as part of the preparatory process of the UN Conference on Sustainable Development (UNCSD) to be held in Rio, Brazil, 4-6 June 2012. Within this framework, FAO has launched the Greening the Economy with Agriculture (GEA) initiative, while OECD seeks to extend its recent work on a Green growth strategy for food and agriculture to developing countries. Invited experts to the Expert Meeting included government officials, producers' organizations, civil society actors and researchers, who technically reviewed and contributed for the improvement of the GEA documents under preparation.

A GEA Roadmap towards 2050, based on synthesis of the findings of the FAO/OECD Expert Meeting on GEA, will be prepared for the consideration of FAO member countries. This document will offer development scenarios and policy recommendations for informed decision-making.

By taking a proactive role in international, regional and national debates for Rio+20 and beyond, the GEA Initiative would create bridges among different types of stakeholders and between constituencies, notably between agriculture and environment, while strengthening the overall resilience of countries to exogenous shocks, either macroeconomic or ecological.

How will we stop Hunger?
Local efforts or global systems?

P V Satheesh

Local food systems culturally integral to the local communities, enhances community health and nutrition while abolishing hunger. While doing so, it encourages ecological farming, conserving the local ecosystems. Most importantly, it helps the marginalized communities in rediscovering their lost dignity. One can get ample lessons about the inevitability of following local food systems in preference to global systems from the dalit women in Andhra Pradesh.

Growing millet crops on leased lands

Year 1996. World Food Summit in Rome. The air was thick with hope. Especially among the food security activists who saw a great significance in the fact that 185 countries chose to send their delegations to the Summit and nearly 125 heads of government or their deputies attended the Conference. But when the summit closed, the world was in for a shock. The summit declared that "trade was a tool for food security". It was immediately understood by everyone that food security would be another instrument to increase the corporate power over food production and consumption across the world. This global shock was articulated by the Cuban President Fidel Castro who made a scathing attack on the cabal of world leaders and walked out of the Summit. This situation also led to the new concept of Food Sovereignty evolved by the international peasant movement, *Via Campasina,* a concept that displaced the discourse of Food Security all over the world. Finally the power play behind hunger and food had been clearly located.

Not that this power was not evident before nor had it not been articulated earlier. As far back in 1970s, a former US Secretary for Agriculture, Mr. Butz had clearly said that *"Agripower, is unquestionably, an even greater force than petropower in man's survival in the future. Man can, and has survived without petroleum, but he cannot survive without food".*

This notion of agripower continued to dominate US global policies. Henry Kissinger the most infamous Secretary of State of the USA had also focused on this line of power when he stated that "If you control oil you are controlling a few governments. But when you control food, you control entire global population"

Therefore, POWER should be at the centre of all discussions on our food systems. What would give control over us to a few powerful people: a global food system or local food system?

Back to the Food Summit. *"We pledge our political will and our common and national commitment to achieving food security for all and to an ongoing effort to eradicate hunger in all countries, with an immediate view to reducing the number of undernourished people to half their present level no later than 2015",* the leaders had proclaimed. In actuality, the number of hungry people had increased in a decade and half since the summit to over a billion, 20% more than the numbers registered in 1996, compelling the Executive Director of the UN World Food Programme to term this phenomenon as "silent tsunami."

In response to this food irresponsible global policy, civil society groups had started honing the concept of Food Sovereignty, into a far sharper argument since 1996. The latest of this was the meet held in Nyeline in Mali, West Africa in 2007. Attended by the Who's Who of food activists across the globe, the Nyelini Conference issued a path breaking declaration. Some of the points in the Declaration were:

Food Sovereignty

1. *Focuses on food for people and right to food, rather than export commodities*
2. *Values food providers and respects their rights, rather than squeezing them off the land*
3. *Localises food systems, rather than promoting unfair global trade*
4. *Puts control locally, rather than with remote TNCs*
5. *Builds knowledge and skills, rather than depending on alien technologies such as GM*
6. *Works with nature, rather than using methods, such as energy intensive monocultures and livestock factories, that harm beneficial ecosystem functions.*

Thus the major tenets of food sovereignty proclamations rested on issues of local food systems, local control and local knowledge.

Let us now land in India and rewind to 2003 when warehouses across the country were overflowing with grains. In contrast to the principles of Local Food Sovereignty, India had rested its faith in a strong *National Food Security system.* The country had seen a bumper stock of over 62 million tonnes lying with the Food Corporation of India. But at the same time the tribals in the Rayagadh region of Orissa had to forego a meal or two every day and stay hungry for weeks on end. Thus a food secure nation with stocks adequate to feed over 25 crore families for an entire year through PDS cards [In other words, all of the one billion population of India for a year] had abandoned a significant chunk of its vulnerable populations to hunger. This was the strongest indictment of the concept of National Food Security which, by its very nature, does not have the potential to eliminate hunger from its poorest households. In 2010, the Supreme Court of India had castigated the Government for having let precious food rot in its warehouses instead of using it to feed the poor. The Indian Government had its neoliberal answer ready: such an action would completely upset the economy of food production! In other words, the government was saying that letting food rot was serving the economy better than feeding it to the poor! An amazing heartlessness!

Therefore, where does one locate one's hope in one's mission of accomplishing food security for the poor and the vulnerable? Since 1990s, before the terms food security and food sovereignty came into wide global circulation, the Deccan Development Society (DDS) has been intuitively following these principles. Local Production, Local Storage and Local Distribution have been the cornerstones of our work which began within the framework of food security and then seamlessly moved onto embrace the concept of food sovereignty.

The road to food sovereignty

The road to food sovereignty for DDS came in four milestones.

1. From 1987-1997: Reclaiming poor people's lands and enhancing household food security

DDS works in Medak District of Andhra Pradesh, India with over 5000 dalit women, most of who own very small pieces of degraded farmlands. These lands came to them as part of the feudal "INAM" land or they were assigned these lands as a part of Government's Land Reform programme. The lands assigned were of very poor quality and very difficult to cultivate. Hence a majority of farmers had left them untended and fallow.

DDS helped over 2700 women farmers to reclaim these land through an Eco Employment programme in which it was envisaged to provide 100 days of employment to each one of its members. The employment was aimed at refertilising their soils through a series of activities such as bunding, trenching, top soil addition etc. Thus within ten years not only a million persondays of employment was generated in about 30 villages but it also led to nearly 300% increase in household food production. Now that the lands were turning productive, the farmers who had left these lands untended, started taking good care of them by installing ecological biodiverse farming systems on them. Millets, legumes, oilseeds, uncultivated greens grown on these lands not only offered a total household food security but also health. nutrition and fodder security. By ensuring biodiverse farming, farmers ensured risk insurance in their farms and accomplished an internalised input system.

2. Community cultivation of food crops for increased food access to the landless

From individual household food security to *Sangham* level Food Security was the next step that DDS took from late 1980s. Under this initiative, the women from DDS sanghams were helped to form themselves into groups of farming collectives [each group consisting of between 7-8 to 30-40] and took lands on lease from bigger farmers in their village and cultivated them collectively. It was invariably food crops that the women cultivated on these lands under ecological management conditions. They would offer a lump sum as lease amount to the landlord. Between 1990 and 2010 the lease amounts per acre varied from Rs.300/acre to Rs.6000/acre. And the size of the land taken on lease has varied between 2 acres [very rarely] to 10 acres [most of the time] to 50 acres [10 per cent of the time] Invariably lands selected for lease are rainfed lands since they have minimum management requirements, less expensive to manage and are conducive to a wide ranging food production. With this initiative, every participating farmer was able to access every season, about 100 kgs of foodgrains, 60 kgs of fodder, 30 kgs of pulses, ten kgs of assorted oilseeds and 50-70 kgs of green leafy vegetables. Together, these would help her family stay food, nutrition and fodder secure for over two months a year.

For many of the participating families this closed the food availability gap they were facing. From their own 1-2 acres of holding they would probably get about 8-10 months of food and fodder. Being a part of a lease group, they would be able to access two more months of food and fodder thereby closing the gap. Over a period of 20 years from 1988 till 2008, over 8,000 women enjoyed food access by leasing in nearly 10000 acres of land.

3. Community lead localised PDS system

But by far, the most seminal initiative of the DDS Food Sovereignty programme has been the community-led Alternative PDS (APDS). The thinking behind this programme was to reevaluate the need for local communities to depend on a highly centralised national PDS system in which local communities had no role to play. Some favoured states such as Punjab and Haryana produced food for the entire country, foods which may be totally alien to the rest of the country. For example, in Medak district of Andhra Pradesh where DDS works, people have been eating jowar[sorghum] and other millets as their staple food for hundreds of years. Why should they eat rice or wheat now? Secondly, travelling long distances, this grain uses up precious fossil fuels for their transportation. This is known as *food miles* in food security parlance. The higher the food miles [the distance traversed from the location of production to the location of consumption] the greater its ecological footprint. Thirdly PDS rice, as mentioned in the Indian Planning

Commission reports are sometimes as old as 12 years, are invariably produced under the chemical intensive Green Revolution model. Therefore why should citizens of Medak eat this bad food while their own millets – pulses – oilseeds combination derived from their dryland farming is immensely superior in terms of nutrition and health?

This was the debate that took place among the sanghams of DDS for many months before the women decided to pilot their own model of PDS based on the principles of Local Production, Local Storage and Local Distribution. Thousands of hectares of local fallows were brought under the plough through an interest free loan to land owners [all of who were small and marginal farmers] ranging from Rs.2700/acre to Rs.4200/acre. In lieu of the loan, the farmers agreed to pay 850 kgs of jowar or any other local millet grown on their land over a period of 5 years.

Every village had a committee consisting of 3-5 women, who monitored the whole process, disbursed the loans, collected the repaid grains, stored them in their own houses through traditional storage systems.

Once this was done, the poorest in their communities were identified by the villagers through Participatory Poverty Assessment tools. Women prepared ration cards for the identified poor that would entitle each poor family a monthly ration of 25 kgs of jowar @ Rs 2/kg. The money collected from the grain sales would be invested in a Community Bank Account and would be withdrawn over time for investment into reclaiming more fallows so that the system turns into a self sustaining cycle.

Each village working with approximately 100 acres of cultivable fallows has not only been producing all the food needed by the poor, but also fodder for nearly 200 animals, health and nutrition that are hallmark of millets, livelihoods upto 5000 persondays and ecological security [because all farming under this initiative used completely ecological techniques]. But the most important feature of the initiative was that all the local people had participated in decision making at every level. Something that Dr De Schutter, the UN Special Rapporteur for Right to Food calls the hallmark of Food Sovereignty:

Building Food Sovereignty relies on the democratization of decision-making processes that affect the rural and smallholder-farming worlds.

[Olivier de Schutter, in his address to the FAO Committee on Food Security, November 2009]

This democratisation of the processes while establishing a local food system has been going on since 1996 and has been working for 15 years at various stages of success. There has been no new infusion of money into this system except for some nominal honorarium for the grassroots workers. Right now a Community Food Sovereignty Trust composed of 9 rural dalit women is managing the system in nearly 30 villages. A Medak Food Sovereignty Network working with 5 NGOs in the district, AP Alliance for Food Sovereingty [APAFS] working with 13 NGOs in 12 districts, Together all these efforts are leading to nearly three million extra kgs of grains being produced every year in 135 villages. Out of this grain nearly 1.2 million kgs are distributed to the people who have been issued a ration card benefiting close to 50000 hungry people in those villages.

Alliance for Food Sovereignty [AFSA] working with 8 NGOs in four states of Maharashtra, Tamil Nadu, Madhya Pradesh, Orissa are experimenting with this model in their own states.

A defining moment for this process came in 2003, seven years after the APDS system started functioning. The DDS communities decided to do a reality check of the impact of their work on their communities. This was done through a series of hunger mapping exercises in their villages. At the end of this process, not more than 130 people in 32 communities [of a total population of more than 75000 persons of which nearly 50000 belong to the BPL sections] were identified as "hungry". Once they completed the map, the sanghams in these villages started their own community kitchens contributing grain and labour from their own houses to feed the hungry. This was an amazing turn of events. Dalit women from the poorest families, who once waited for doles from outside to quench their hunger were today giving out food to the hungriest in their communities. This was the power transferred to the women by a local food production system controlled by them.

Seed Sovereignty, the first link in the food chain

While all this was happening, the issue of seeds and the shrinking seed diversity caught the attention of DDS women in mid 1990. They were using over 100 varieties of various seeds [millets, pulses,

Storing diverse millet grains for family consumption

Communities involved in hunger mapping exercise

Input - Output Abstract	*Year 1*	*Year 2*
Input Details:		
Loans to land beneficiaries	*Rs. 39.16 lakhs*	*Rs. 19.45 lakhs*
Payment to rural artisans for storage bins	*Rs.0.35 lakhs*	*Rs.00.51 lakhs*
Output Details		
Total no of villages covered	*31*	*32*
Lands brought under cultivation (Mostly current fallows, degraded hard terrain with low fertility)	*2636 acres*	*2676 acres*
Number of people benefitted (mostly marginal poor landholders from SCs and BCs)	*1729*	*1729*
Total no of days of employment generated	*2.39 lakh persondays*	*2.44 lakh persondays*
Number of days of employment genrated per village	*7967 persondays*	*7625 persondays*
Number of days of employment / acre	*90 persondays*	*91 persondays*
Estimated wage income generated	*Rs.35.85 lakhs*	*Rs.36.60 lakhs*
Calculated at market wages of Rs.15/- per day for women and Rs.20/- for males		
Calculated at market wages of Rs.100/- per day Per person as per the wage rate in 2010	*Rs. 2.37 crores*	*2.45 crores*

Note : This wage income accrued not only to the land beneficiaries (1729) but also other labour households who are not covered by the scheme.

Total income earned on 2636 acres (I Year Rs.108 lakhs

Total income earned on 2676 acres(II Year) Rs.110 lakhs

oilseeds] in mid '60s. But by mid '80s this number had shrunk to less than 25 varieties. This was a great concern for both food and farming. As the varieties of food they used to cook in their kitchens come down, so will their health and nutritional well being. Any nutritionist will attest to it. Similarly, if their farms start using less and less seeds and lose their diversity, the essential strength of their farming and its inherent risk insurance capabilities will be lost for ever. More than anything, the seed self sufficiency which is at the heart of the DDS communities would have been completely forsaken.

Keeping all this in view the DDS sanghams started a programme called ***Community Gene Fund*** in 1997. The essential objective of this was to reclaim all the lost seeds and make their communities seed sovereign. The women leaders travelled to all their relatives and their villages, scoured the presence of seeds in various households and brought fistful of seeds from all these places. Finally, they were able to build up a gene pool that had been lost in the previous 2-3 decades.

The seeds were brought to their communities and handed over to a couple of farmers in each of their villages for multiplication. In order to do so, they received financial help from their sanghams. Once they multiplied the seeds, the farmers would repay 25% of their loan every year in the form of seeds. Seeds were handed over to one or two women selected by their sangham for safe keeping and sharing with their community. These were the **Community Gene Banks** of DDS. Over the years, every single village where DDS works has come to have its own seed bank. Over 90 seed varieties have been stored in these banks. They are lent to any farmer who wants them on the local seed sharing principle that she will return it at 1:1.5 or 1:2 ratio after she plants and harvests her crops.

Over ten years, the number of women borrowing seeds from their Community Seed Banks started coming down. While we enquired the reason anxiously, the reply was heartening. It was simply that every woman had become a seed bank herself saving between 15-20 varieties of seeds in their own houses. Thus, DDS women have truly become seed sovereign. Now they don't have to look out for seeds outside their communities. They have demonetised their seed transactions.

Compare this with the seed mayhem that goes on in Andhra Pradesh year after year. When the government announces that it will start distributing subsidised seeds, there will be virtual riots. Farmers start sitting on roads for days on end, trample each other [once, seven farmers got killed in trampling in Anantapur], have been fired upon by the police and have suffered untold indignities. Comparing their desperation with the quiet dignity of the dalit women of DDS, a dignity that comes of community control over seeds, one can get ample lessons about the inevitability of following local food systems in preference to global systems.

A nine member Community Food Sovereignty Trust (FST) composed entirely of dalit women, established in 2006, has been

now administering and monitoring the entire food sovereignty work. The Trust Preamble clearly mentions what its objectives are:

1. Over a period of five years, hunger in all its manifestations shall vanish from all the communities where the FST is engaged in.
2. In order to achieve this profound goal, the DDS FST shall work to establish a priority for cultivation of food crops over non food crops in their communities.
3. The eradication of hunger shall come through the enhancement of biodiverse farming systems in our communities. Such enhancement shall be visible on the farms of the poor in particular and all farmers in general. These farms shall sport more than ten crops at the same time and space.
4. The DDS FST shall **ensure** that every community with which it is engaged shall have more than 50 varieties of traditional seeds that are time tested, vibrant and therefore can simultaneously guarantee diverse yields and ecological security.
5. In this process, the DDS FST shall make sure that the leadership of women and dalits over their food and seed systems shall be irrevocably established.

In summary, what local food systems bring to the local communities are:

- Democratic decision making with women taking the leadership
- Farming that is local eco system adopted and hence breathing life into their soils.
- Food that is culturally integral to local communities, thereby enhancing the household and community health and nutrition
- Confidence in their own science and practice
- Truly abolish hunger from their homes and communities
- Eliminate distress migration from villages
- Rejuvenate local businesses
- Let the local communities and marginalised people rediscover their lost dignity

None of these will be possible for a global food system, that can leave communities devastated, food systems in tatters, remove nutrition from food, raise food prices through speculative trade.

The countries in Global South can secure their food and nutritional security only when they look inward and strengthen local food systems instead falling a prey to the predatory global food markets.

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Themes for LEISA India

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Land and Land Rights

Land is a secured resource. Large scale land acquisitions by government and companies also known as "land grabs"-allow them to secure food supply or simply make a profit. The current and impending food crises are increasing pressures on the ownership of land and its use for agriculture. What are the implications of this for family farmers or small holders? Land grabs cause large scale migration, poverty and conflict –not to mention environmental impacts. Biodiversity decreases when small family farms are replaced by mono-crops treated with pesticides and fertilizers. Small scale farmers have little power to farm sustainably if they don't have control over land: secure access to land is prerequisite for farmers to invest in sustainable agriculture. Land grabs give rise (directly or indirectly) to other issues, the rights of pastoralists, ethnic or political conflicts, and also threaten protected areas.

The key question is: who has the rights to land, or determine what happens to it? In some countries, the central government is the main decision making authority over land issues, while with others this control is delegated to local authorities or traditional leaders. Land policies can undermine collective land management, as land is divided up and allocated to individuals. Farmers are often excluded from land planning processes: they are overruled by local leaders or removed from their land without warning. Also among farmers some have more access to, control over and rights to land than others. Minority groups, for example, including the indigenous population, often have less power over land. The same is true in many societies for women, who have less influence when it comes decision making and ownership. How can (all) farmers be included in all decision making processes?

Please send your articles to leisaindia@yahoo.co.in before 31st October 2011.

Supporting locally determined food systems

The role of local organizations in farming, environment and people's access to food

Michel Pimbert

Localized food systems provide the foundation for people's nutrition, incomes, economies and culture throughout the world. Locally determined approaches and organizations play critical roles in sustaining farming, environment and people's access to food. In order to alleviate hunger and protect environment, local organizations should be centrally involved in managing and governing local food systems.

Food systems include not only the production of food but also processing, distribution, access, use, recycling and waste. Today, there are still many diverse food systems throughout the world, particularly in developing countries. Indeed, most of the world's food is grown, collected and harvested by over a billion small-scale producers, pastoralists and artisanal fisher folk. This food is primarily sold, processed, resold and consumed locally, with many people deriving their incomes and livelihoods through work and activities at different points of the food chain – from seed to plate.

Such localized food systems provide the foundation for people's nutrition, incomes, economies and culture throughout the world. They start at the household level and expand to neighbourhood, municipal and regional levels. And localized food systems depend on many different local organizations to coordinate food production, storage and distribution, as well as people's access to food. Moreover, the ecological and institutional contexts in which diverse food systems are embedded also depend on the coordinated activities of local organizations for their renewal and sustainability.

But despite their current role and future potential in meeting many of the Millennium Development Goals (MDGs), locally determined food systems – and the local organizations that govern them – are largely ignored, neglected or actively undermined by the international development community.

Local food systems, livelihoods and environment

A significant number of livelihoods and environments are still sustained by a diversity of local food systems throughout the world. Most local food systems are embedded in complex, risk-prone and diverse environments, where most of the world's rural poor people live. These environments include mountains, hills and wetlands, as well as the vast tracts of the semi-arid and humid tropics. As participants in localized food systems, local communities actively influence key ecosystem functions such as:

- sustaining the ecological basis of food systems;
- coordinating human skills, knowledge and labour to generate both use values and exchange values in the economy of the food system;
- the local governance of food systems, including decisions on people's access to food.

The role of Local Organisations in sustaining local food systems and livelihoods

For as long as people have engaged in livelihood pursuits, they have worked together on resource management, labour-sharing, marketing and many other activities that would be too costly, or impossible, if done alone. Local groups and indigenous organizations have always been important in facilitating collective action and coordinated management of food systems and their environments at different spatial scales.

The different types of local organizations concerned with food, farming, environment and development include traditional and indigenous organizations; governmental and quasi-governmental organizations; non-governmental and voluntary organizations; emergent, popular or "community-based" organizations, including new social movements.

Local organizations exist across a range of scales – from individual through national to international federations, consortiums, networks and umbrella bodies. One reason for linking up and

federating in this way is to increase the effectiveness of organizations in managing localized food systems and their leverage in policy and political debates on farming, environment and people's access to food.

Many rural communities are no longer in charge of managing their local food systems, and, importantly, they are not "trusted" by state bureaucracies to be able to do so. But, throughout the world, local organizations – individually and collectively – still play a key role in:

- sustaining the ecological basis of food systems;
- coordinating human skills, knowledge and labour to generate both use values and exchange values in the economy of the food system;
- the local governance of food systems, including decisions on people's access to food.

a. Local adaptive management of food-producing environments

Local organizations are crucial for the adaptive and sustainable management of food-producing environments. Local groups enforce rules, incentives and penalties needed for the sustainable management of landscapes, environmental processes and resources on which local food systems depend. Moreover, local organizations are particularly well placed to monitor and respond adaptively to environmental change. This is important because variation within and among the environments in which local food systems are embedded is enormous. Daily, seasonal and longer-term changes in the spatial structure of these environments are apparent at the broad landscape level right down to small plots of cultivated land. These spatio-temporal dynamics have major implications for the way food-producing environments are managed – how, by whom and for what purpose.

More generally, collective action, based on social learning and negotiated agreements among relevant actors in an ecosystem, is often a condition for sustainable use and regeneration of that ecosystem. Platforms that bring relevant actors together are key in mobilizing capacity for social learning, negotiation and collective action for natural resource management and sustaining critical ecological services on which local food systems depend. Examples of platforms include joint forest management (JFM) committees, farmer field schools (FFS), local fishing associations and user groups of various kinds.

Local organizations usually develop successful adaptive management regimes when they build on local practices and the knowledge used by rural people to manage food- producing forests, wetlands, fields, rangelands, coastal zones and freshwater systems. Moreover, the "learning by doing" approach of adaptive management, and the experiential knowledge shared in local organizations, often generate the skills and confidence needed to address wider livelihood and environment issues. All this suggests new practical avenues for outside technical support in which land and water users' own priorities, knowledge, perspectives, institutions, practices and indicators gain validity in the search for a liveable world and human well-being.

b. Local organizations and people's access to food

Once food has been harvested from fields, forests, pastures and water, local organizations oversee its processing in a variety of local contexts. Many local organizations and groups also determine people's access to food. The criteria and indicators used by these local organizations to guide action often reflect culturally specific forms of economic rationality and highly diverse definitions of well-being. Indeed, the latter usually sharply contrast with the indicators and criteria used in mainstream definitions of poverty, wellbeing and economic exchange. For example, the international development community's current emphasis on market-based approaches is largely blind to the fact that many local organizations mediate forms of economic exchange that exclude the use of money.

Take the case of the official Public Distribution System (PDS) in India, that was set up as a safety net for the poor has become socially and ecologically counterproductive. In the farming belts stretching across the Deccan plateau, north Karnataka, Marathwada, the deserts of Rajasthan and many adivasi (indigenous people) areas in central India, coarse cereals like sorghum and various nutritionally rich millets (pearl, finger and foxtail millets) have been the mainstay of agriculture, diet and culture.

Farming of these crops extends to 65 per cent of the geographical area of the country where agriculture is rainfed and where the concentration of the rural poor is among the highest in the world. These rainfed crops require very few external inputs and no irrigation. They offer nutritional and food security for rural communities – especially for the marginalized and most vulnerable. And yet, "progress" in food production and peoples' access to food in India over the last decades has been fuelled just by two crops: rice and wheat (the "fine" cereals). Of every 100 tonnes increase in food production, 91 tonnes were contributed by rice and wheat. The remaining 9 tonnes were provided by coarse cereals (5.5 tonnes) and pulses (3.5 tonnes). In the last three decades, sorghum has lost 35 per cent of cropping area, and little millet has lost nearly 60 per cent of cropping area.

Despite all the rhetoric of increasing food production in the country, policy-makers and foreign development aid advisors have allowed nearly 9 million hectares of the millet–sorghum growing area to go out of production. One of the major contributors to this problem is the Public Distribution System (PDS), as practised in India, which concentrates on only rice and wheat. This centrally run national PDS provides for a regular and continued uptake of rice and wheat from the market for distribution to the poor at subsidized prices. The PDS offers a steady and remunerative price for rice and wheat farmers who are already supported by subsidized irrigation, subsidized fertilizers and adequate crop insurance. On the other hand, farmers from the rainfed areas suffer from multiple disadvantages – no assured irrigation, no subsidies, no crop insurance, and unreliable market forces. Moreover, the flooding of the Public Distribution System with cheap rice and wheat weans

Prajateerpu – a citizens' workshop on food and farming futures in Andhra Pradesh, India

Prajateerpu (or "people's verdict") was an exercise in deliberative democracy involving marginal farmers and other citizens from all three regions of the state of Andhra Pradesh. The citizens' jury was made up of representatives of small and marginal farmers, small traders, food processors and consumers.

Prajateerpu was jointly organized by the Andhra Pradesh Coalition in Defence of Diversity (made up of 145 NGOs and POs), the International Institute for Environment and Development (IIED), the Institute of Development Studies (IDS) at the University of Sussex, the University of Hyderabad, Andhra Pradesh, and the all-India National Biodiversity Strategy and Action Plan (NBSAP). The jury hearings took place in Medak District, Andhra Pradesh, in June 2001. Jury members also included indigenous people (known in India as adivasi), and over two-thirds of jury members were women.

The jury members were presented with three different scenarios – Vision 2020; an export based cash-crop model of organic production; Localised food systems. It was up to the jury to decide which of the three policy scenarios provided them with the best opportunities to enhance their livelihoods, food security and environment 20 years into the future.

The key conclusions reached by the jury members, their own "vision of the desired future", included features such as:

- ***food and farming for self-reliance and community control over resources;***
- ***maintaining healthy soils, diverse crops, trees and livestock, and building on indigenous knowledge, practical skills and local institutions.***

It also included opposition to the proposed reduction of those making their living from the land from 70 to 40 per cent in Andhra Pradesh; land consolidation into fewer hands, and displacement of rural people; contract farming; labour-displacing mechanization; GM crops, including Vitamin A rice & BT cotton; loss of control over medicinal plants, including their export.

The Prajateerpu and subsequent events show how the poor and marginalized can be included in the policy process. By being linked with state-level and international policy processes, the jury outcomes and citizen voice have encouraged more public deliberation and pluralism in the framing of policies on food and agriculture in Andhra Pradesh.

away the traditional users of coarse grains and leaves the small-scale production of sorghum and millets without a market. As a result, many rainfed farms have been abandoned, and large areas of dryland agriculture are turning into fallows, enhancing desertification.

In response to these multiple crises, local organizations have developed alternative forms of PDS based on the cultivation of local grains, local storage, local processing and decentralized local control in different regions of India. Like the alternative PDS run by women's organizations in Andhra Pradesh (For details see article on p.7), such community-controlled systems of food distribution contribute significantly to the alleviation of hunger and the regeneration of degraded drylands. They also significantly reduce the overhead costs incurred by the mainstream Public Distribution System (PDS), which involves energy- intensive long-distance transport of food grains, the maintenance of a huge storage infrastructure and centralized management.

c. Federations, networks and organized policy influence

Federated organizations have an important role in projecting the voice and concerns of small-scale food producers and other citizens in a variety of spheres. Many such federations that aim to influence policy-making are not entirely focused on natural resources and agriculture.

Producers' organizations have also been active at the international level. One example is Via Campesina, a broad, worldwide coalition of peasants and farmers lobbying on land-tenure reform, agroecology, and food sovereignty. Bold innovations such as the Prajateerpu ("peoples' verdict") on the future of food and farming in South India (see box) suggest new ways of bringing together coalitions and federations of the poor with international organizations. Local organizations and federations are thus increasingly becoming expressions of an emergent citizenship in the governance of food systems. People have special rights when it comes to food, and claiming and exercising these rights to "food sovereignty" has become a movement that is very much in tune with this concept of "citizenship".

Reclaiming diverse local food sytems

Sustaining diverse local food systems, and the hundreds of millions of livelihoods associated with them, calls for reversals in contemporary patterns of economic growth, modernization and nation-building. Achieving the MDGs for hunger alleviation and environmental sustainability will largely depend on emphasizing locally determined food systems and policy frameworks that empower local organizations to manage food systems and their environments. These are not the easy options. Dominant rules that govern food and agriculture are designed a priori to strengthen not autonomous local organizations but professional control by the state and corporations – and to facilitate not local but international trade.

Build on local institutions and social organization. Existing organizations are resources to be strengthened, changed and

developed, not ignored and suppressed. Increased attention will need to be given to community-based action through local organizations and user groups that oversee different parts of the food system. Past experience suggests that if this type of institutional development is ignored in food and agricultural policies, economic rates of return will decline markedly, and the MDGs may not be met.

Build on local systems of knowledge and management. Local management systems are generally tuned to the needs of local people, and often enhance their capacity to adapt to dynamic social and ecological circumstances. Although many of these systems have been abandoned after long periods of success, there remains a great diversity of local systems of knowledge and management. Despite the pressures that increasingly undermine these local systems, plans to strengthen locally determined food systems should start with what people know and do well already, to secure their livelihoods and sustain the diversity of environments on which they depend.

Build on locally available resources and technologies to meet fundamental human needs. Preference should be given to local technologies by emphasizing the opportunities for intensification in the use of available resources. Sustainable and cheaper solutions can often be found for farming, food processing, storage and distribution when groups or communities are involved in identification of technology needs, and then the design and testing of technologies, their adaptation to local conditions and, finally, their extension to others. The potential for intensification of internal resource use without reliance on external inputs is enormous at every point along the food chain. However, combinations of traditional and modern technologies are possible too. This is particularly true with the development of miniaturization, multipurpose machines, multimedia and computer-assisted technology, knowledge in agro-ecology, and efficient renewable energy systems that can all enhance local autonomy and ecologies, minimize pollution, and expand the realms of freedom and culture by eliminating needless toil. But local organizations should decide which new innovations are needed, when, where and under what conditions along the food chain.

Support local participation in planning, management and evaluation. If activities associated with different parts of local food systems are to become adaptive and participatory, this will imply significant changes in how outside support is conceived and organized. Support is needed for participatory learning approaches in which the main goals are qualitative shifts in how people and institutions interact and work together.

Supporting locally determined food systems and organizations in the context of the MDGs also call for reversals in international and national policies. Indeed, there is a fundamental conflict between a global food system of centralized, corporate-driven, export-oriented, industrial agriculture, and one that is more decentralized and smaller-scale, with sustainable production patterns primarily oriented towards domestic markets and localized food systems. Reinforcing such localized food systems entails shifts from uniformity, concentration, coercion and centralization, to support more diversity, decentralization, dynamic adaptation and democratization in food systems.

Conclusion

Much of the Millennium Development community sees development as a process in which there will be a reduction in the number of people engaged in farming, fishing and land/water-based livelihoods. It is assumed that small-scale food producers, rural artisans, food workers and many of the rural poor will inevitably migrate to urban areas and find new and better jobs.

Indeed, most international and national social, economic and environmental policies envision fewer and fewer people directly dependent on localized food systems for their livelihoods and culture. Encouraging people to move out of the primary sector and get jobs in the largely urban-based manufacturing and service sectors is seen as both desirable and necessary – regardless of the social and ecological costs involved. This view of progress assumes that history can repeat itself throughout the world. However, it is becoming increasingly clear that there is a direct relationship between the vast increases in productivity achieved through the use of automated technology, re-engineering, downsizing and total quality management, and the permanent exclusion of high numbers of workers from employment, in both industry and the service sector. This erosion of the link between job creation and wealth creation calls for a more equitable distribution of productivity gains through a reduction of working hours, and for alternative development models that provide opportunities and local spaces for the generation of use values rather than exchange values.

The social and ecological potential of local food systems and organizations must be seen in this context. While neither perfect nor always equitable, locally determined approaches and organizations play critical roles in sustaining farming, environment and people's access to food. In order to achieve the MDGs for hunger alleviation and environment, local organizations should be centrally involved in managing and governing local food systems. Linear views of development and narrow assumptions about "progress" and "economic growth" must be replaced with a commitment to more plural definitions of human well- being, and diverse ways of relating with the environment.

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Promoting a diverse food culture through people's initiatives

Campaign on Food Sovereignty in Mayurbhanj

Seema Prasanth

Believing that people have knowledge, giving due recognition to that knowledge, creating platforms to share and strengthening their capacities is what DULAL has supported by facilitating a people-centered development process. Farmers with renewed confidence are going back to their traditional systems of farming ensuring food and nutrition security for the households. Empowered farmers, today, are in a position to lead campaigns, meetings, rallies and food festivals promoting the establishment of sustainable food production systems.

A woman displays stored maize seeds

Santal, Ho and *Bhathudi,* are three tribal communities of the Mayurbhanj district in Orissa, India which like many others depend primarily on agriculture for their livelihoods. Traditionally, farmers in this millet growing region have been practising traditional methods of agriculture. Millets are the major food source with wild foods collected from the adjoining forest area, adding to the food diversity of these tribal communities.

During the sixties, the government introduced high yielding varieties of paddy though the lands were not suitable for paddy cultivation. The lure of high yields and the subsidy component attracted a number of farmers to opt for paddy cropping. Gradually the millets were replaced. Over the years, the paddy yields started declining. Also people started having easy access to "hand-out" food from the Public Distribution System (PDS) run by the central government. All this resulted in the neglect of locally grown food crops, the consequences being reduced diversity of food and increasing insecurity .

To help the local communities address their problems collectively, DULAL, a local development organisation, started working with these tribal communities since 1987. Informal groups were formed and some health programmes were initiated. Women came together to share their problems and find solutions and in the process also developed collective savings. Later, some income generating activities were initiated with and without the support of the government.

Emergence of people's campaign

In 2002-03, DULAL promoted fruit trees on the waste lands, popularly known as the *Badi* model. We were happy that the farmers willingly participated in the programme and also reaped good benefits. The programme was also rated as "successful" in terms of its coverage and impact. Very soon we realised that the communities had merely implemented certain activities (like digging pits and planting) and they did so for receiving direct payments. As a result we found that the people had no sense of ownership for what they did and continued as long as the project support was provided. This set us to think and reflect.

We realised that in implementing programmes, we were focusing more on reaching targets and the organisation interests over-rode people's interests. The demands of funding agencies to see tangible results often resulted in focusing on achieving 'targets'**.** Often our reports had to bear the crude statistical achievements when there was a lot the people had 'actually achieved'. The activity plans were prepared by the technical people on behalf of the local communities and they were implemented as per the plans. Rigid plans and frameworks failed to foster people's participation and to nurture farmer innovations. Our staff was most often "providing solutions" rather than understanding communities' needs and priorities. We were sure that we needed a shift in our thinking, strategy and approach.

A series of workshops were held at different places in India and Bangladesh with a number of other NGOs and with farmers, enabling deeper exchanges on the concept. In one of the workshops, we looked at the main issues and concerns related to the *Badi* model. For the first time, farmers' views on how to replicate and

Seed multiplication

In 2007-08, around 16 farmers started varietal trials on small patches of land. Uneven distribution of rainfall affected sowing and also yields. But the farmers were bold and experimental enough to continue trial cultivation (especially the older farmers). By 2009, already 155 farmers were cultivating several varieties of millet like Jowar, Khado, Gundulu, Mandia, and Kheri that had not been cultivated for over 20 years. The number of millet varieties being grown has expanded to nine, tubers to five, and 22 different leafy vegetables have been identified for cultivation. The practice of seed purification by seed selection, which was abandoned for more than two decades, was taken up again.

Local seed exchanges

Farmers are on the path of regaining many of the seeds that they had lost. Around 1020 seed exchanges have taken place at a village, district and state level since 2006, all of which have enabled farmers to get back some seeds that were lost from their area. Farmers also set up seed banks in the villages to conserve the traditional varieties. More than 1025 farmers initiated individual seed banks in 225 villages.

sustain the gains from this model were taken into account. Interestingly, farmers came out with a number of suggestions, mentioning, for example, that beneficiaries could become trainers; that they could develop a corpus fund to help members buy saplings, meet the training costs; and enable other farmers to raise vegetables and pulses to prevent grazing.

These ideas were integrated into the *Badi* model and the results were amazing. Farmers started intercropping tubers, sobai grass, paddy, pulses, vegetables, millets, and also oil seeds in the *Badi.* They started exchanging seeds and also collecting and cultivating lost food varieties in the area. This brought "life" to the programme and farmers enthusiastically took care of their *Badi* plantations.

The success of the "improved" *Badi* models instilled a lot of confidence in the staff to carry forward new development processes. Staff members were trained to be "facilitators". More importantly, they were made to understand the village economy and the role of indigenous knowledge in day-to-day life. With this new orientation, the Food Sovereignty campaign was launched with the aim of empowering people to lead the process of attaining food sovereignty. With this campaign, DULAL initiated a genuine people-led development process.

Regaining crop and food diversity

Farmers took the initiative to organise meetings at village squares. They started sharing what they were cultivating, the inputs used and the yields obtained. The farmers shared how they were compelled to use chemicals and more water to get good yields from the high yielding varieties of paddy seeds supplied by the government. They then analyzed the cost of cultivation, understanding how it was lower in the earlier days.

To have a better understanding of the farmer-led development processes, exposure visits were organised to farmer groups (women, elders, youth) in various places within the district and the state. Visits to farmer groups in Bangladesh and Thailand, where farmers have been through a similar process for a longer period, were also organised. All these events led to an increasing exchange of information and debates on traditional seeds, farming systems, diverse food and their cultural practices.

Farmer exchange sessions in the villages of the Kuliana, Bangriposi, Bisoi and Saraskana blocks helped in analysing various related aspects like the seasonality of crop production, the

Displaying varieties of millet seeds

households' average income and expenditures, and the periods of food security and scarcity. As part of this process, people identified the resources available and also looked at how they were being used. Communities carried out seed mapping exercises. All members of the community were resource persons in the process: the young and old, the men and women. They made a seasonal calendar. This analysis helped people to understand the "busy periods" and the "leisure periods" in cultivation, and led to a better time planning. The seed mapping exercises brought out that over a period of two decades the millets like *Jowar, Khado, Gundulu, Mandia,* and *Kheri* got replaced by crops like paddy. This meant that the village was losing its food diversity.

To bring back the food diversity farmers decided to include millets back into their cropping systems. But reviving millet cultivation was a challenge, since very few farmers were still cultivating these varieties, and it was hard to find the millet seeds. Farmers started collecting lost seed varieties of food crops from other farmers, sometimes travelling to remote villages where traditional cultivation was still alive. Some farmers collected seeds from fellow farmers during their exposure visits.

But the seeds of these traditional varieties were not many, so they had to be multiplied. Moreover, some desirable traits suitable to local conditions had to be integrated. All this meant that farmers had to start a seed selection and breeding process, and so they set up systematic field trials. This was supplemented by organising seed exchanges and setting up seed banks (See Box)

All these efforts yielded many positive results. Crop diversification increased. Farmers started cultivating different crop varieties on a single land. Farmers are following mixed cropping and rotational cropping methods, and some became really innovative: for instance, one farmer in the Kusumi block managed to grow 92 varieties of crops on his 1.5 acres land! Many farmers have totally "brought back" the traditional farming systems and are offering live labs for others to observe. The cultivation of millets is providing nutritious food to the households and also fodder for the cattle. Farmers have also started cultivating some wild varieties of food crops and have broadened their food basket. Seed storage systems that were limited to a few varieties of paddy grains have expanded too. Now, many varieties of pulses, millets, tubers and vegetables are also being stored in the seed banks. With the availability of local varieties, the number of farmers buying seeds of input-dependant, high yielding varieties from the market reduced considerably.

Communities take the lead

Initially, DULAL organised awareness campaigns on various issues like the impact of GM crops and the negative impacts of chemical use. Gradually, farmers started joining the process and began to take initiative in the organisation of sensitization campaigns, rallies, village food/seed analysis and crop planning. Farmer leaders in each of the 210 villages in the region organised farmers' workshops on the issue of food sovereignty. Communities organised nine *pada yatras* to sensitize the larger population on food sovereignty issues. Four role plays on the ill effects of modern seeds were organised in four villages. Many of the issues related to crop cultivation were discussed. All events were entirely organised by the local communities.

Linkages established with experienced advocacy groups at the regional level provided a better understanding of the larger issues. Communities started getting involved in protests and campaigns. Three major protest rallies against GM seeds were organised in the Bangriposi, Bisoi and Saraskana blocks by the women groups and farmer groups. The whole effort was conceived and organised by the people. More importantly, the women took leadership in *organising* these activities. Such people-centered activities have resulted in wide spread awareness building on issues affecting the local communities.

Local communities have found different ways to celebrate and encourage traditional and diverse food habits. For instance, if a farmer cultivated millets and had a good harvest, he/she would organise a food festival in which many different dishes made from millets would be prepared and served to the villagers. Besides 35 village level food festivals, eight such festivals were organised at the district and block level during 2007-09. The food festivals have revived the celebrations of these customs with new vigour in the tribal villages.

People-led development processes are more empowering and inclusive. We found that there can be no limits either on the geographic coverage or in the number of people we could reach with this process. We see the "food sovereignty campaign" which has spread to 57 villages across seven blocks in Mayurbhanj district as just a beginning.

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Regional Food Systems

Ensuring food security and genetic diversity

Suman Sahai

Agro-biodiversity is the most important requisite for having a healthy and strong regional food system. It is genetic diversity that allows regional food systems to be productive, even in times of ecological stress. The richness in the genetic diversity of crops means an agro-ecosystem that is hardier and more resilient to biotic and abiotic stresses such as pests or climate variation.

The concept of regional food systems has become an issue to be debated in the last five years or so, as the world confronts the economic, environmental, and social impacts of the globalised agro-industrial food system that originated in the west and is now spreading to developing countries. Problems as diverse as food inflation, land degradation, climate change, food safety and the seemingly contradictory burdens of rising obesity and stagnating malnutrition levels, have given cause for reflection on the way that we are growing and eating our food. It has prompted a search for an alternative paradigm of food production and consumption (Donald et al 2010).

How far the industrialisation of food has gone can be witnessed by any international traveller. In hotels across the world, identical processed foods are served, supplied by the same companies. French fries, packaged yoghurt, jams and preserves, frozen meats and vegetables, noodle dishes with pre-prepared sauces, even bread, travels around the world from agribusiness companies. Everything tastes the same everywhere!

Environmental and social movements originating in the west, often collectively termed 'local food movements' have decried food systems where production is too far removed from consumption. A long value chain, characterized by layers of middle men responsible for refining, processing, packaging, shipping, and marketing, was seen to be rife with inefficiencies and extraneous costs (Pretty 2001). Thus local food movements sought to shorten the value chain, re-link the producer and consumer, and reduce negative externalities to promote a more sustainable food system that was based on a healthier regional cuisine.

What is more, in an era of climate change it seemed imprudent, even reckless, to be transporting foods thousands of kilometres around the globe in the name of international trade and the capitalistic logic of comparative advantage. The concept of 'food miles' was borne out of this specific negative externality of the current food system and serves as a metric to gauge the carbon footprint of food and agriculture products. Thus the benefits of returning to a smaller-scale, regional food systems are several-fold and include reduction of greenhouse gas emissions, improvement of health through increased consumption of fresh foods, and less market distortion due to cutting away layers of middle men.

Issue of food security

In regions where food security remains an issue, the benefits of regional food systems are not just better strategies for survival but are also linked to diversified and sustainable methods of cultivation as well as improved (and affordable) health and nutrition. Studies show that increases in trade liberalisation and the resulting dependence on global commodity markets manifest themselves as increased hunger in poorer parts of the developing world. The soaring inflation and food crisis of 2008 accompanied by food riots and loss of life is attributed to the global food regime controlled by agri- business (Donald 2010). But this is only one of the many impacts which a globalised food system has on marginalised populations in the developing world which struggle with diminishing food options.

The approach to food in every traditional community has been holistic, based on diverse sources and essentially dependent on local foods. These could be cultivated in fields, collected from the wild or nurtured in the commons. Rural communities have food, nutrition and livelihood strategies that are inextricably linked to their surrounding bioresources. These bioresources, which can be cultivated (millets or rice), semi-domesticated (tubers and leafy greens), or wild (fruits, berries), all help households meet their nutritional and livelihood needs. Such bioresource based systems cannot be compartmentalised. Often the same plants will provide several products like food, fodder and fibre or food, nutrition and medicine. Collectively, they provide most of the needs of the rural communities like food, nutrition, fodder, medicine, fibre, fuel and cultural goods.

Traditional cultivation practices allowed supplementary food sources to become available. In typical rice paddies that used farmyard manure and organic nutrients, the rice field yielded rice and fish, the banks offered snails and crabs and many water plants had medicinal properties that were used to treat human and animal diseases. Along the sides of the fields, a plethora of leafy greens eaten as vegetables provided nutrition to the rural family, all for free.

A good example in the Indian context where regional food systems can be far superior to a centralised food system is the PDS (Public Distribution System). Instead of stocking rice and wheat across India, if the PDS would stock local and regional foods, it would enable the government not only to provide foods suited to local tastes but to do so cheaply and more efficiently. Since it would be locally procured, the foods would be fresher and more diverse and they would not come burdened with the food miles that contribute to global warming.

In fact a decentralised PDS system procuring regional foods from close by would give a boost to local farmers and catalyse the local agriculture and economy. It would fulfil another important function, that of conserving the genetic diversity that forms the basis of food security. If the PDS would buy traditional varieties of crops from farmers and thus ensure them a market, there would be a great incentive for farmers to continue growing these crops and they will not feel the pressure to shift to high yielding varieties which get them higher incomes. Most people, specially the rural communities prefer the taste of the traditional varieties of food crops as compared to the high yielding versions, so there should be greater acceptance of these varieties.

In a decentralised PDS , each state can procure regional foods that are grown and eaten preferentially by the people there. Karnataka could include Ragi (finger millet) which is the most popular food in rural areas there; Rajasthan could procure Bajra (pearl millet), its staple for long, for its PDS. Maharashtra where many people eat jowar (sorghum) in preference to rice and wheat could sell subsidized jowar through its ration shops.

Building a system of regional subsidised foods will be a good opportunity to conserve the genetic diversity of crop plants and other foods like tubers and vegetables to support local food security. It will provide a broader basis for food security and help the food system ride out the disruptions anticipated due to climate turbulence resulting from global warming.

Conserving genetic diversity

The most important asset for the rural poor is to have a diversity of resources from which to draw on for food and nutrition. This acts as insurance against the vagaries of nature, so if drought, disease, or pests destroy certain crops one year, they are still able to provide nutrition to the household through other varieties of the same species or other species, forest products or minor crops grown on the field margins. These alternative sources of nutrition, crucial to rural communities' survival, are available because of the thousands of years of careful crop selection by farmers which has resulted in today's agro-biodiversity, the basis of local food security.

Agro-biodiversity is arguably the most important requisite for having a healthy and strong regional food system. FAO defines agrobiodiversity as, "the variety and variability of animals, plants and micro-organisms that are used directly or indirectly for food and agriculture, including crops, livestock, forestry and fisheries. It comprises the diversity of genetic resources (varieties, breeds) and species used for food, fodder, fibre, fuel and pharmaceuticals. It also includes the diversity of non-harvested species that support production (soil micro-organisms, predators, pollinators), and those in the wider environment that support agro-ecosystems (agricultural, pastoral, forest and aquatic) as well as the diversity of the agro-ecosystems (FAO 1999).

Species diversity is essential to providing adequate, nutritious and culturally appropriate food, as people cannot live healthy, productive lives eating only a few types of cereals. It is genetic diversity that allows regional food systems to be productive, even in times of ecological stress. The richness in the genetic diversity of crops means an agro-ecosystem that is hardier and more resilient to biotic and abiotic stresses such as pests or climate variation.

Contrast this with the rice, maize or wheat monocultures of the Green Revolution. Although they provided initial increases in productivity, their uniform and narrow genetic base was shown to be inordinately susceptible to pest attacks, drought, and disease. Because they lack the hardiness of locally adapted varieties they require high levels of chemical inputs such as fertilisers and pesticides. This reliance on chemical inputs has led to soil degradation and eutrophication of waterways in the case of fertilisers, and pest resistance and elimination of beneficial organisms in the case of pesticides and herbicides. All this disrupted the ecological balance required for maintaining soil health necessary for the cultivation of diverse crops to support food security. Such developments have been particularly harmful for the poor farmer-consumer, as all of the features of this agro-industrial model led to an extremely fragile system of production, where one inopportune development can mean total crop loss.

In a rural food system, this risk cannot be taken. A system rich in agro-biodiversity will also face the same ecological stresses, however there will always be alternative crops available in case of a bad year. Agro-biodiversity also contributes to plugging gaps in consumption, which is important in cash scarce households. For example, by cultivating several rice varieties with different maturity periods, food security is augmented over a longer period of time.

The management of an agricultural system rich in diversity does not require intensive chemical inputs and thus negative externalities are minimised. Instead, this system responds well to agro-ecological practices such as integrated pest management, nitrogen-fixing crops, vermicomposting, and multi-cropping. Agro-ecological practices are often labour intensive as opposed to capital intensive, which is better suited to rural communities that are labour rich but cash poor. Further, these practices actually produce positive externalities since they strengthen and gradually improve the ecosystem, leading to overall better resilience to stresses. It becomes quite clear that a strong regional food system is predicated on the maintenance of agro-biodiversity through an agro-ecological approach to production as opposed to chemical intensive monocultures.

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Regional Seed Systems in the Malnad

Preserving food security the traditional way

Tuula Rebhahn

Vegetable diversity on display

Around the world, agribusiness pulls in profit by controlling access to seed, severely limiting the number of varieties sold, and patenting certain genetically modified seeds – all the while claiming to improve food security. Meanwhile, a decentralized but powerful force has been working to make seeds freely available to anyone who can grow them, encourage crop diversity and allow nature to do its work of multiplying the number of seeds available with each harvest. Through the simple act of saving and exchanging seeds, the Malnad women are doing the real work of securing food for the generations to come.

Imagine an India with 40,000 actively cultivated varieties of rice. Imagine the perfect crop for every micro-climate, soil type, and farming technique. Imagine the country's greatest natural resource – its agricultural biodiversity – protected in the hands of millions of farmers who supply 100% of their food locally.

This India is not imaginary, just history. Before the Green Revolution, hunger and food insecurity did not exist in the country on the scale it does today, and agriculture was small-scale and highly diverse. Can this India be restored? Maybe – and the secret is in the seeds.

Three years ago, I took a break from my college studies to undertake an internship abroad, in the Malnad region of Karnataka's Western Ghats. For twelve weeks, I worked for the NGO Vanastree, which seeks to preserve traditional livelihoods, seeds, and sustainable farming practices.

While in India, I absorbed several textbooks' worth of information and met dozens of inspiring people, but one experience that always stands out in my mind is the Seed Mela (fair) hosted by Vanastree and partner NGOs midway through my internship. In the small town of Yellapur, in the northern part of Uttara Kannada district where Vanastree does most of its work, around 400 women farmers gathered with home-grown vegetables, honey, spices, pickles, and, most important, seeds. All the women were part of local seed exchange groups, whose members meet regularly to trade seeds and farming know-how. They gathered on the floor to hear the leaders among them speak about the connection between global food shortages and the disappearance of small-scale agriculture, and the grave importance of preserving both traditional knowledge and traditional seeds before they drown in the coming tide of industrial agriculture.

The women listened, then began moving around the room to examine what each village group had to share. The excitement was palpable. To an outsider, the act of looking at vegetables and seeds may have seemed insignificant, but from the viewpoint of food security, it was momentous. In fact, it was a miracle it happened at all, considering the isolation of these mountain communities. During the monsoon season, many roads are impassable, and the rest of the year, few causes are important enough for them to sacrifice an entire day's work. Contact with the outside world – whether from outside visitors, television or radio – is very limited. This seclusion is responsible for keeping traditional livelihoods relatively intact in the Malnad. But, globalizing forces are having their effects. The social and economic structure that has always been built on agriculture is changing. Cash crops are taking over in place of vegetables, pulses and grains.

It is in response to these forces that women farmers and home gardeners in the Malnad are taking seed saving and exchange to a new level, building their groups and mobilizing them to document the agricultural biodiversity in the region. Another effect of the Malnad's pocketed geography is the endless ecological niches it creates – each garden had a new and unusual crop variety to share. Many seeds that change hands contain the genetic code that have the potential to bring to a new community, a crop that had never been grown successfully before.

This agricultural biodiversity is another aspect that make Seed Melas like the Malnad so unique. Walking around the room that afternoon, I soon lost track of the varieties I counted: Eggplants in multiple sizes, colors and shapes, from small white eggs to deep purple baseball bats. The local tuber staples, *Dioscorea*, *Amorphophallus* and *Colocasia* (*kesu* in Kannada), each species

with several variations. A plethora of okra, greens, cucumbers, gourds, bananas, and chilies. And vegetables are just the beginning; the women also brought honey, eggs, milk, ghee, cocum butter, spices, pickles and other value-added foods. Then, of course, there are the grains – black gram, green gram, cowpea and ragi.

Who are these women? Many are home gardeners, with plots of land barely larger than their modest homes. Some have larger pieces of land, and grow a few crops for sale at the markets in the nearest village. A few are farmers with acres of paddy or areca orchards, but who, unlike their husbands, recognize the unsustainability of this type of agriculture and wish to focus on growing food for the local community. Their seed saving groups are structured as collectives, without a hierarchy or political goals, motivated by the simple desire to preserve traditional seeds and farming methods. Loose connections to regional NGOs allow for occasional contact with other groups at melas like the one I attended, but they don't need much direction to do what they have done for thousands of years. In their clay pots, dried gourds and paper envelopes, they keep a vast seed bank that is more secure than the most high-tech facilities in industrialized nations. Among the hundreds of women involved, there are thousands of copies of their crops' genetic code, stored much like the internet stores data on servers spread around the world.

Unfortunately, much like the internet, this landscape-wide library of genetic information lacks a complete catalog. The Malnad region is bursting with agricultural biodiversity, but no one knows precisely how many varieties are being grown and what characteristics they possess. There are many reasons for this – the difficulty of travelling between villages and rural outposts on poorly maintained roads, a weariness towards outsiders, and even some fear that once the secret gets out about what is grown there, big-agribusiness agents will attempt to mine the region of its biological gold. There's also the nature of the plants themselves – a new variety achieved one season may be lost the next. Even more worrisome, however, is the gradual loss of ancient varieties that have been passed on from generation to generation. As urbanization erodes, available farmland and the pressure to grow cash crops such as betelnut and cotton rises, pockets of locally driven agriculture are threatened.

Enter the NGOs. Despite the odds, Vanastree has put on a Seed Mela roughly every two years for the past decade. Thanks to funds from various foundations, a solid volunteer network, and partnerships with other organizations like TEED (Tribals Educational and Environmental Development trust), which helped put on the Seed Mela in Yellapur. GREEN Foundation, based in Bangalore, is another organization in the region that encourages small-scale agriculture and builds community seed banks.

An artistic display of grains, spices and vegetables at Yellapur seed mela

The Foundation is also developing an online seed catalog as a way of documenting Karnataka's agricultural biodiversity.

My internship with Vanastree allowed me to assist with this type of data collection, attending field trips to farms and home gardens across the region and then assembling files back in the office that listed each variety and its characteristics, such as water tolerance, need for sun, and the life span of its seeds – anywhere from a year to five.

Around the world, agribusiness pulls in profit by controlling access to seed, severely limiting the number of varieties sold, and patenting certain genetically modified seeds – all while claiming to improve food security. Meanwhile, a decentralized but powerful force has been working to make seeds freely available to anyone who can grow them, encourage crop diversity and allow nature to do its work of multiplying the number of seeds available with each harvest. Through the simple act of saving and exchanging seeds, the women I met while in India are doing the real work of securing food for the generations to come.

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Challenges of moving towards a food sovereignty perspective

A realistic vision or flight of fancy?

Siddhartha

Food shortages, nutritional imbalances and ecological degradation are the direct consequences of distorted government policies. Only a movement away from the present model of agriculture to one that is based on locally adapted food sovereignty principles will help us overcome this situation. Genuinely decentralized policies for the production, distribution, marketing, processing and consuming of food, with an emphasis on the local and the regional level need to be evolved.

Distorted government policies will lead to eventual food shortages

It is not uncommon for me to buy a few apples or oranges and then find that they have travelled all the way from the US or South Africa. Each of those apples or oranges leave behind a carbon footprint and contributes to climate change. Likewise the food grains transported over long distances also leave their prints. Globalisation has created a monstrous system of food production, distribution and consumption where we don't know anymore where the food comes from and whether it is healthy or not. It is true that in the big cities of India we now find shelves with various kinds of organic foods. But this is available only to the well-off and the majority of our population must make do with the grain and vegetables produced with overdoses of pesticides, herbicides and chemical fertilisers.

Upto a point we can say "we are what we eat". In India, and much of the world, the ability for people to eat locally grown nutritious food is a luxury. The white rice that most people consume on a daily basis in south India is high in starch and has a high glycemic index, meaning that it releases glucose rapidly into the bloodstream. The answer would be to consume unpolished rice. But unpolished rice, with the nutrients intact, does not have a long shelf life and will turn rancid after a few months. If the food system was regional it would be possible to hull paddy every few months and make whole grain rice freshly available to the consumer at regular intervals.

We are however living in a global food market involving huge profits. Market fundamentalism and agri-business call the shots. Any attempt to go regional would be seen as a political and economic threat. In India, were it not for the resistance movements of farmers, the government (in collusion with agribusiness) would have embraced a model of 'agriculture without farmers' sometime ago. Despite the importance of the small farmer to the electoral process, only an intensification of farmer's struggles and intelligent advocacy and lobbying can bring about meaningful changes. Of course, all this can only happen if there is a simultaneous change in our values, for we are facing a major civilisational crisis.

Most of us have forgotten Mahatma Gandhi's dictum of local production for local consumption. We can quite easily make a list of food grains, masala powders, cooking oil, khadi, firewood, vegetables, biscuits, sweets, etc. that can be produced at the local level for family consumption and for the local market. A long list of locally produced goods would signify that a country is genuinely independent and not subject to supra-national tyranny. The present model of neo-liberal globalisation weakens the nation state and transfers elements of sovereignty to transnational corporations and their collaborators like the WTO, the World Bank and the IMF.

If we have to feed the billion plus population of India it is clear that we need to move from the competitive, standardised and mono-cultural approach of food security to that of food sovereignty which is based on cooperative and democratic forms of food provisioning. It is also clear that we need to shun the agribusiness approach and progressively embrace a decentralised and small farmer-centred model of production and distribution where the consumers are primarily, but not exclusively, local. We are not there yet. In fact we are aggressively moving in the opposite direction. It looks like things will only get worse before they get better.

Despite the good harvest that the country's farmers have produced in 2011, millions of people will still go hungry. Amartya Sen famously stated that food availability in the markets and an

A village level meeting in progress

emphasis on aggregate food availability does not mean that particular individuals and groups will be able to access the food. In other words stating that a country has acquired food security says little about all those people who will still go hungry.

Even before climate change became an issue we were heading for serious water shortages. Our two major cereals, wheat and rice, will not have enough water to sustain present levels of production. Lester Brown states that it takes 14 tons of water to make a ton of steel, but it takes 1000 tons of water to grow a ton of wheat. My friend Devinder Sharma recently told me that 5000 litres of water is needed to produce 1kg of rice.

With ground water tables dropping and several rivers like the Ganges and the Brahmaputra slated to have less water because of the melting of the Himalayan Glaciers the future prospects for rice and wheat do not look very good. With every one degree Celsius rise in temperature, food production might diminish by as much as ten percent. Suman Sahai of Gene Campaign states that in the case of wheat, which is a temperature sensitive crop, a one degree rise in temperature might lead to a loss of four to five million tons in South Asia.

All over the world food prices have been shooting up these past few years. In India the increase has occasionally hovered around 20%. In addition to the usual reasons like poor monsoon, bad storage facilities and hoarding we must now reckon with factors related to acute water shortages and climate change. Some countries like Saudi Arabia may be rich in oil but poor in water. Once self-sufficient in wheat it will see the end of wheat production by 2016. This is because of over-pumping from their aquifers. In nearby Egypt water shortages have forced the country to import 40% of its grain requirements. Algeria has no choice but to import 70% of its grain.

The shifting of land towards bio-fuel production is also a grave cause of concern. The US harvested 416 million tons of grain in 2009. Of these 119 million tons was diverted to ethanol production to provide fuel for cars. The increase in bio-fuel production all over the world has led to a stampede to buy land wherever it is available. The Chinese company ZTE International bought 6.9 million acres of land in the Democratic Republic of Congo to produce palm oil and bio-fuel while the people of Congo themselves use only 1.9 million acres to produce corn for its 66 million inhabitants. China was also trying to acquire 2 million hectares in Zambia for bio-fuel production from Jatropha.

In many countries free trade agreements benefit fewer and larger transnational corporations who dump cheap farm products. This leads to farming becoming uneconomical, and farmers abandoning their farms to migrate to the cities, which in turn affects local and national food production. TNC's like Cargill and Monsanto have been pushing GMO seeds. Apart from affecting the health of the consumers these companies are also forcing farmers to buy seeds from them. In India we are experiencing this phenomenon with BT cotton, where the farmers have no choice but to buy from seed companies. Likewise, if genetically modified food grain production

eventually enters India we will find farmers becoming completely dependent on seed companies.

Case study of 'local' agriculture being destroyed by the market

My experience from the field at H.D.Kote taluk, Mysore District, South India, suggests that government is sending a clear message: let the market decide. What is narrated in the following account, documented by Shabin Paul (Pipal Tree) in collaboration with the Millet Network of India, shows that a local system of food production has been destructively transformed and progressively integrated in the national and international market.

Antharasanthe Panchayat of H.D.Kote taluk used to produce much of its own food about forty years ago. The local food and farming culture was based on millets like finger millets (ragi), sorghum (jola), foxtail millet (navane), little millet (samay) and pearl millet (sajje). Sixty per cent of the land was under millet cultivation. Today ragi is the only millet grown here, cultivated in about 20 per cent of the land. A good proportion of farming has now shifted to BT cotton, sugarcane, ginger, turmeric and tobacco. The farmers are now obliged to buy food grains from the open market and also procure from the public distribution system (PDS).

Since agriculture in Antharasanthe panchayat is mainly rain-fed, millets were the ideal food crops as they did not need irrigation. They were cultivated as mixed crops and were grown together with about seven varieties of pulses and lentils. Hence local communities were self-sufficient in their food requirements when millet-based mixed farming was the practice.

Although the farmers were not aware of it, the cultivation of millets also represented low carbon farming, since they did not use chemical fertilisers and pesticides that are responsible for harmful nitrous oxide emissions. Apart from reducing the cost of cultivation millets based mixed farming also improved soil fertility and prevented soil erosion. Since millets also provided sufficient fodder, the farmers were able to maintain bulls for ploughing the fields and cows for milk. The dung went to provide manure.

Today the poorer farmers are dependent on the inorganic polished rice, wheat and processed sugar of the PDS and the open market. The small quantities of vegetables they buy in the market also contain high doses of pesticides.

Some of the reasons for these unfortunate changes are as follows:

Due to the low market rate and diminished demand for millets their cultivation does not bring them enough revenue to meet their household needs. If they lease out their lands to others they get Rs.30000 to Rs.35000 per acre per annum. So leasing appears as a better financial option.

Values from the new market context, combined with traditional prejudices, have convinced the poorer section in rural areas that the consumption of millets is a sign of low social status; many have now switched to rice and wheat.

The loss of traditional awareness related to seed collection and household grain storage methods has led to the unavailability of quality seeds in time. Obtaining seeds from the agricultural extension is difficult since the farmers have to follow a tedious procedure of submitting various documents which takes a long time to be approved. Besides, they are apprehensive about the quality of seeds they get from there.

With the rise of individualistic values, the culture of seed exchange has all but stopped. In earlier times, farmers borrowed seeds from each other.

While the government shows a lack of enthusiasm for the cultivation of millets, financial and technical support is given to cash crops.

Since the use of tractors for ploughing and transportation has become popular the number of livestock has reduced considerably. This in turn has increased the cost of cultivation and the growing of millets is not considered economical.

The availability of rice and wheat through PDS at highly subsidised rates gives small and marginal farmers a false sense of security. So even those who were cultivating millets for their own consumption turned to the cultivation of cash crops, or leased out their land.

All this has led to serious consequences for the local communities. For example, middlemen and money lenders have benefited most from the shift to commercial crops. Many self-reliant farmers have now become dependent on wage labour and the PDS for the survival of their families.

Changes in the food habits have resulted in the poor health of the people. Farmers say that they were healthy and strong when millets were part of their food. Health problems related to diabetics, blood pressure, cholesterol, etc. were rare in earlier days. Most of the women and young girls these days are anaemic and have problems during pregnancy.

Women now have less control over food supply. Since men are the ones who market commercial crops the women have little say on how income should be used.

Alcoholism among men has kept pace with the increase of commercial agriculture and violence against women is on the rise.

Its not just millets that have suffered as a result of market forces. Locally available non-market varieties of greens have seen a dramatic decline in consumption. People are now dependant on greens that come from outside the area. In the case of the adivasis most of their traditional food sources (like wild tubers, mushrooms, and greens gathered from the forest) are not available to them anymore due to eviction from the forest or displacement when the Kabini dam was constructed.

Going by similar studies from other areas it is clear that we have moved away dramatically from a traditional model of sustainable agriculture to one that is more unjust, global and related to agribusiness.

Despite the negative trends is there a way to get back to a food sovereignty approach that is more just and democratic? It's a tough challenge, but we must nevertheless struggle in this direction. Otherwise the future will be catastrophic, especially in the context

of climate change. We must also emphasise that hundreds of thousands of small farmers are bucking the trend with their organic farming practices, where they try to be self-reliant in food production for the family.

Moving towards the local and the regional

Food sovereignty is nothing more than a rephrasing of Gandhi's notion of Swadeshi. Satish Kumar, the founder of Schumacher College, has reworked Swadeshi in more contemporary terms:

"According to the principle of Swadeshi, whatever is made or produced in the village must be used first and foremost by the members of the village. Trading among villages and between villages and towns should be minimal, like icing on the cake. Goods and services that cannot be generated within the community can be bought from elsewhere."

"Swadeshi avoids economic dependence on external market forces that could make the village community vulnerable. It also avoids unnecessary, unhealthy, wasteful, and therefore environmentally destructive transportation. The village must build a strong economic base to satisfy most of its needs, and all members of the village community should give priority to local goods and services."

This kind of local production not only meets most of the local needs but also creates full employment. Since goods are mostly marketed/ exchanged and consumed at the village, local and regional level it would reduce transportation requirements considerably, one of the key factors that could mitigate climate change.

The organic farmers movement in H.D.Kote taluk, Savayava Krishikara Sangha (SKS) is an inspiring example of 166 small farmers coming together to produce for domestic consumption and for the market. Even a two-acre farmer who grows cash crops like cotton will put aside at least half an acre for growing ragi for the family. The farmers in the movement sell vegetables locally and sugarcane and ragi through their marketing outlet at Handpost, which is in the same taluk. Most importantly they produce their own seeds or exchange with each other. What this movement shows is that a food sovereignty approach can go hand in hand with the production of cash crops in a responsible manner.

After much prodding, the government of India has at last come out with a National Food Security Bill in 2011 that has a strong regional flavor. It talks of encouraging state governments "to undertake a decentralized planning process and to procure, store and distribute food grain at local levels from district to panchayat, with a view to minimize transportation costs and losses and provide state governments with the appropriate facilities and incentives". The Bill also states that state governments will set up procurement centres within a radius of 10 kilometres and provide spot payment to farmers.

Food production must be for the needs of the local community first, and then for regional, national and international requirements. It must lead to self-reliance, which implies reducing dependence on others and allowing for non-exploitative trading relations. This would be possible if the right value framework and political will were there. Notions like GDP and standards of living are taking us away from true happiness. We should replace them with a quality of life index that includes material, psychological and spiritual well being. Bhutan talks about Gross National Happiness instead of GDP.

It is easy to make suggestions, but difficult to transform them into reality. Nevertheless, hope springs eternal and the struggles must continue. Here are a few basic points that cannot be overlooked if we have to move to a regional approach. To begin with, the government must regulate markets so that the market does not dictate what is grown. Guidelines may be worked out so that food crops do not suffer due to the unrestrained cultivation of cash crops. Local grain warehouses should be established as soon as possible. The grain from these warehouses may first supply the local PDS and markets and only then be made available to more distant regions. Apart from farmers producing their own seeds the state government should help with technical inputs in all possible ways. One of the big problems in rural areas is the absence of compost. Even those farmers who have livestock end up merely heaping the dung and spreading it out on the fields before cultivation. It is necessary to create awareness through farmers' movements, NGOs and government extension services that producing compost is a fundamental condition for meaningful agricultural practice. In addition, the cultivation of millets, integrated with mixed cropping, must be practiced in at least fifty per cent of all dry land areas in India. Landless agricultural labourers must develop kitchen gardens where a little land is available around their homes. Bullock carts can come into vogue again for transporting farm products within the panchayat. As far as possible smokeless chulas, basic solar lighting and bio-gas must be staple practice for the majority of rural homes. Horticulture and green manure trees must be grown along bunds and the boundaries of the fields.

Only a movement away from the present model of agriculture to one that is based on locally adapted food sovereignty principles will prevent farmers from becoming disillusioned with their vocation. An NCAP study states that forty per cent of Indian farmers would like to quit farming. A regional approach that is participatory will empower a farmer to be creative and fulfilled. And this is not an impossible dream to work towards. It would imply a national debate on the relationship of food to human well being. The awareness that is generated should push the government to evolve genuinely decentralized policies for the production, distribution, marketing, processing and consuming of food with an emphasis on the local and the regional.

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Bringing back millets into food systems

Vijay Jardhari

Nature has provided a unique system of food security. From the womb of a mother, the life starts securing food and the process continues during the childhood and onwards. Plants also secure its own food through photosynthesis. Human being is the only creature who needs frequent food otherwise there are many live animals who can live for months without food.

Historically, societies secured its food needs from its own ecosystem and they were self-dependent. Mahatma Gandhi also advocated village republics towards this approach. Alas, today the whole agriculture and food security is going to be in the hands of multi-nationals. In all the Indian Himalayan states from Jammu Kashmir to Nagaland, there may be diversity in dialect, forest resources and food habits but there is uniformity in agriculture, livestock and forest dependent livelihoods. Millets are an important component of this food habit. The endurance capacity and physical strength of people living in hills is well known which has been primarily due to the food habit. People had system of common food stocks in the villages.

Uttarakhand, though a small state of 53483 sq. km. and a population of 90 lakhs has only 13 percent irrigated agricultural land. The un-irrigated land has been well managed for food production by dividing it into two cropping periods which is known as 'Saar' system. One 'Saar' comprises of crops like 'Madua' 'Baranaja' and another one has crops like 'jhingora' and un-irrigated paddy. This system ensures food diversity as well as soil fertility. 'Baranaja' is quite common in every part of Uttarakhand. In 'Baranaja' cropping system more than 12 varieties of cereals are grown. 'Chaulai' and 'Kuttu' are also used as green vegetables. 'Rajma' has protein amount equal to meat products and those who use 'kulath' are prevented from problems of kidney stone. The bread of 'Madua' and rice of 'jhangora' is quite popular which are full of nutrients. These millets provide energy and strength to people engaged in hard physical labour.

Inspite of decreasing diversity, even today ten types of food crops namely paddy, wheat, mandua, jhigora, kangri, keena, ogal (kuttu), ramdana, chaulai, jowar are quite common. Every season has 40-50 domestic vegetables and 30-35 varieties of wild vegetables. There are almost 12-15 varieties of pulses. Domestic and wild fruit varieties are also common. There are almost 5-6 varieties of fishes in smaller rivers and people are also fond of meat of goat-sheep, poultry etc. Though, livestock has decreased significantly but still almost every family has one buffalo and people consume milk besides selling it in market. Terrace cultivation has helped in growing fruits, fodder, medicinal plants etc. Kitchen garden is also common.

There is a famous saying in the region according to which wild animals, climate change and government (policies) are the biggest enemies of farming'. Wild animals like monkey and boars have created problems. The increasing climate uncertainties are also affecting adversely. Areas which received 3 ft snow are now with no snow at all. More importantly, government policies have a strong influence on the food and farming systems of a region. Due to government policies, the traditional crops are being replaced by cash crops. It is also evident that maximum number of farmers who have committed suicides are those who have gone in for cost intensive cash crops.

Civil society organisations have been making a lot of efforts in preserving the millet growing culture in the region. Beej Bachao Andolan, a movement against the use of chemicals in millets like 'madua' and 'Jhangora' is one among them. Of late some of the measures taken by the government are positively inclined in bringing about this change in farming systems. For instance, the recently started government scheme for promoting millets for nutritional security is expected to benefit millet growers. However, there is also a growing fear that multi-nationals will capture these nutritional crops also. Out of 300 crores sanctioned for the scheme, Uttarakhand has received 5.87 crores for promotion of 'Madua' and 'Jhangora'. However, the way the state agriculture department is implementing the scheme, it is feared that neither these millets will be conserved nor the fertility of soil be improved.

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Village level gene seed grain bank

An initiative to promote sustainable food and nutrition security

Alok Kumar Badoghar

Village gene seed grain banks are one of the important methods used to provide seed, food and nutrition security and conserve agro biodiversity. Such decentralized system where villagers themselves plan, manage and undertake all stages of food production, storage, distribution and management are more sustainable in providing food security at local level.

Agriculture is the main stay of the people living in Koraput district in Orissa. The region is endowed with impressive biodiversity. The agro biodiversity recorded in this region includes 340 landraces of paddy, 8 species of minor millets, 9 species of pulses, 5 species of oil seeds, 3 species of fibrous plant and 7 species of vegetables.

Traditionally, rice was being grown on upland, medium land, lowland, crops like finger millet (*Eleucine coracana*), little millet (*Panicum miliaceum*), foxtail millet (*Setaria italica*), Niger (*Guizotia abyssinica*), pigeon pea (*Cajanus cajan*) and horse gram (*Dolichos uniflorus*) were cultivated in donger (land on hill slopes) and upland only. With the advent of Green Revolution, the state government promoted high yielding varieties (HYVs) of rice, also supplying seeds and inputs at subsidized rates with guaranteed buy back of the harvested paddy. Similarly establishment of paper mills, cashew processing company and their support to farmers triggered plantation of cash crops like, cashew and eucalyptus in donger and upland areas. As a result, farmers discontinued growing local land races of millets and pulses leading to their loss. From around 1750 landraces of paddy and more than 30 varieties of finger millet in the 1950s, the district was left with only around 340 varieties of paddy and 10 varieties of finger millets.

To address the issue of food security and conservation of local land races, M.S.Swaminathan Research Foundation (MSSRF) started working with the people in this region. Initially four villages were selected and farmers were shown how these traditional varieties could be grown in a better way. Processes like Participatory Plant Breeding (PPB), Participatory Varietal purification and selection (PVS) were used integrating practices like integrated pest management and integrated nutrient management to optimize productivity.

Transactions at the seed-grain bank

Farmers were trained on modified methods of cultivation in their fields from the stage of nursery raising to seed selection and purification. The results of participatory experiments were encouraging. Not only were yields increased but farmer preferred landraces were also conserved. One of the lowland variety through the PPB and PVS was Kalajeera. It had a black husk, high aroma and capacity to add taste to many items of food like biriyani in addition to its amenable properties for value addition like puffed rice and beaten rice. Now 150 farmers cultivated this landrace on a large scale. The extension of cultivation method of PPB and conservation of more landraces in tribal area, a number of farmer association were facilitated.

Village gene seed grain bank (VGSGB)

Farmers set up a village level seed, grain and gene bank to store, conserve and use the local land races as and when needed.

The **gene bank** restored the available traditional landraces of crops. While few varieties were available in villages, some were procured and multiplied from the community gene bank situated at MSSRF, Chennai. All varieties are grown by village gene seed grain bank committee on a community land. Besides, each farmer also grows his desired traditional variety along with one or two more varieties

on his land for conservation. While the farmer preferred variety is cultivated on a large scale for his household and marketing purpose, the other varieties are grown on a small patch which will be returned to the gene bank for conservation and further use. In this way, the viability of every variety is protected.

The **seed bank** is promoted for conservation and large scale cultivation of traditional landraces among farmers. Each farmer contributes 5kg of seeds of paddy, 500 gm of finger millet, green gram and niger either from high yielding or traditional variety. The seeds of agriculture crops are stored according to a) farmer preferences for taste, size & crop duration and b) purposes like fodder, suitability based on land type. For example, cultivation of Sapuri traditional rice variety is preferred for its straw and grain, while cultivation of Janhamandia a traditional finger millet variety is preferred for its shorter duration. Now there are 10 varieties of paddy, 3 varieties of finger millets, and 2 varieties of little millets niger, black gram and green gram found in the seed bank.

Grain bank is intended to overcome periods of food scarcity. Earlier during the lean period (August to November), farmers generally took grain on loan from the landlords and returned with an interest of 100%. Grain banks were set up to check this exploitation. Each household contributes 10 kg of paddy, 1 kg of finger millet. MSSRF supplemented by providing horse gram and pigeon pea for nutritional security. The villagers now take loan from the grain bank and repay it after availing from public distribution system.

Managing VGSGB

The VGSG bank is managed by a committee represented by members of the village. The members represent different sections of the society. Around 50% of the members of the executive body are women. The committee is responsible for the collection, distribution, use of surplus grain and fixing of interest rate for food grain and seed. Regular meetings are being held between management committee and villagers to discuss issues related to function of VGSG bank. MSSRF has been building the capacities of the committee members on the management aspects as well as organic cultivation methods.

Grain transaction goes on through out the year but seed transactions are made only once a year. A household cannot take loan from grain or seed bank as much he/she wants. The distribution depends upon the size of family, land holding and capacity to repay. Interest rate of seed varies 25-50% per year from village to village. Sometimes surplus seeds are transferred to the grain bank or sold (if the quality is not adequate for seed purpose). The money thus earned is deposited in the village developmental committee account.

Panchabati Gramya Unnayan Samiti (PGUS)

To institutionalize the initiative, a farmers federation, Panchabati Gramya Unnayan Samiti (PGUS) was formed which represented 16 village level committees. The total number of general body members is 100 of which 48 are women. Each village pays Rs.25 as a monthly fee. The institution has been instrumental in sustaining the initiative started by MSSRF.

PGUS is providing training to people and community institutions like village gene seed bank committee and Self Help Groups on conservation of traditional varieties and its sustainable use. The VGSG bank committee and PGUS provide traditional paddy and vegetable seeds to the villagers and Women SHGs.

This initiative of PGUS was awarded Equator Initiative Award at the World Summit on sustainable Development held at Johannesburg in August 2002 and Genome Savior Award 2006 and 2011 by the protection of Plant Variety and Farmers Rights (PPV&FR) Authority of the Government of India. The award amounts are maintained in a trust as a fund for community development. Now the PGUS is utilizing interest money from the awards within the 16 villages for community farming like fish, poultry, goat, mushroom cultivation, create awareness on modern technology like SRI cultivation method. The formation of PGUS may be seen as one of the first and finest examples of institutionalization *of* benefit sharing.

Conclusion

Village gene seed grain banks are one of the important methods used to provide seed, food and nutrition security and conserve agro biodiversity. Such decentralized system where villagers themselves plan, manage and undertake all stages of food production, storage, distribution and management are more sustainable in providing food security at local level.

Acknowledgements

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Go local – reduce food miles

"The wise man should consider that health is the greatest human blessing. Let food be your medicine".

– Hippocrates

"To eat is a necessity, but to eat intelligently is an art"

– La Rochafoucauld

Food is not only a nutrient for the growth and maintenance of any animal including human beings, but also a source of medicine that influences the attitude and mentality of the consumer. All the three characteristics of any being i.e., Sattvic, Rajasic and Tamasic depend on the food one feeds on.

The food habits in a region have developed along with the growth of civilization based on the climatic conditions and social structure of that particular region. For example, the coastal population uses coconut oil for cooking, the upper part of Deccan Plateau uses groundnut oil, people in the southern plains of the same Deccan plateau use gingelly oil, the northern part of the Deccan Plateau use Safflower and Sun-flower oil. In most of the Northern States people use mustard oil which grows well in these areas.

Communities in every region have been depending on the principal food crop grown in their regions. For instance, people in the coastal areas and in hilly tracks cultivate paddy and hence rice is their staple food. In most of the northern plains where the temperatures go below 10 ^{0} C during winter, people have got used to wheat as their main food. People in the northern parts of Deccan plateau grow bajra, jowar and legumes like redgram (arhar) bengalgram, green gram and feed on them. Communities in middle Deccan Plateau are confined to cultivation of millets and their consumption.

As a thumb rule, food cultivated and consumed within local geographic regions and seasons are ideal for a healthy living. But with the development of civilization, communication and changes in food habits, we have started going international at the cost of local food systems. "An Apple a day keeps the doctor away", a well known proverb, no longer applies to all anymore when we understand the distances the apples travel before they arrive on our plate. Last year I was in a secondary school anniversary day of Karimnagar District in Andhra Pradesh and a ninth standard student demonstrated how a New Zealand grown apple was coated with synthetic wax to protect it from shrinking and also with poisonous colour to make it appear brighter, by scratching the apple carefully with a sharp knife and burnt it. In my opinion, we have to change the same proverb as "An apple a day invites doctor".

Most of the problems like loss of humus content in the Deccan Plateau from 3 % to 0.3% is the result of growing high responsive varieties (not at all high yielding varieties) with use of agro chemicals in the form of chemical fertilizers. Crops not adapted to local conditions were introduced and popularized which also required high doses of plant protection materials and weedicides. The animal based protein has caused food scarcity and many health problems.

Policy makers as well as the farmers are responsible for promoting only rice and wheat as principal crops across the nation. These were done to oblige the seed industry. Growing population is not the major problem for the prevailing food insecurity but more importantly it is the abuse of food in storage, distribution, wastage and using grains for animal feed to produce animal protein.

Again 2 years back, 15 university students from Long Island University of New York State U S A had come to visit our farm. During lunch time they asked me a question about the food mileage of the food served to them. The question was very strange to me and after understanding it, I said it could be a maximum 5 kilometers, which they could not believe. I showed them that 90% of the food was grown in our own farm while the food in U S A would have travelled at least 1500 kilometers. Now any one of us can understand that one of the main reasons for global warming and a big change in climatic conditions is due to our changing food habits. By giving importance to neglected micro-millets, tubers of various kinds, let our future generation also have something for their survival, let them not curse us for exploiting natural resources totally.

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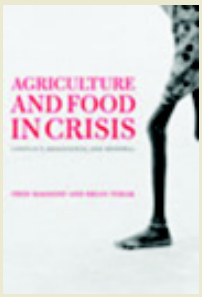
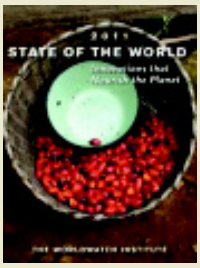
Agriculture and food in crisis - Conflict, resistance and renewal by Fred Magdoff and Brian Tokar. Published by Monthly Review Press Website: www.monthlyreview.org. June 2011, 348pp, ISBN 978 1 58367 226 6 (Pb), $18.95.



The title says it all - there is no denying that world population, growing in number and aspiring to diets rich in calorie-demanding meat and livestock products, is fast outstripping food production. Simultaneously, there is clear evidence that declining soil fertility, urbanisation of prime agricultural land, competition for water for domestic use and industry, and the reduction in cereal yields due to raised temperatures are all limiting capacity to raise crop yields. Some still look to science and technology to provide the doubling in food production required by 2050 but the contributors to *Agriculture and food in crisis* believe that there are social, political and economic answers, including returning power to the smaller farmer, removing the domination of agriculture by a handful of global agribusinesses, and recasting agricultural trade to remove the inequities that they see penalising farmers.

The final chapter by Jules Pretty responds to the question 'Can ecological agriculture feed nine billion people? He concludes: "Time is short and the challenge is enormous...At this time we are neither feeding all the 6.7 billion people in the world nor conducting agriculture in an environmentally sound way. It may be possible to feed the estimated 9 billion people living on earth by mid-century. However, this will take a massive and multifaceted effort that may include changing the way animals are raised, and limiting the ill-conceived use of cereals for conversion to transport fuels. In addition, support is needed for the development of social capital in the form of farmers' groups that can innovate and adapt. We need to begin this project today." This book is worth reading for Pretty's insight alone.

State of the World 2011: Innovations that Nourish the Planet The book is published outside of the US, Canada and India by Earthscan and can be purchased at www.earthscan.co.uk/sow2011 or by calling +44(0)12 5630 2699 with ISBN number 9781849713528.



The 2011 edition of our flagship report is a compelling look at the global food crisis, with particular emphasis on global innovations that can help solve a worldwide problem. *State of the World 2011* not only introduces us to the latest agro-ecological innovations and their global applicability but also gives broader insights into issues including poverty, international politics, and even gender equity.

Written in clear, concise language, with easy-to-read charts and tables, *State of the World 2011*, produced with support from the Bill and Melinda Gates Foundation, provides a practical vision of the innovations that will allow billions of people to feed themselves, while restoring rural economies, creating livelihoods, and sustaining the natural resource base on which agriculture depends.

Climate change, water and food security by Hugh Turral, Jacob Burke and Jean-Marc Faurès. Published by FAO. Website: www.earthprint.com. 2011, 174pp, ISBN 978 9 25106 795 6 (Pb), US$45 or free to download

With more frequent and increasingly severe droughts and floods, climate change is set to significantly impact agricultural productivity and food security by increasing the demand for water, limiting crop productivity and reducing water availability. "Both the livelihoods of rural communities and the food security of a predominantly urban population are at risk," says FAO assistant director general for natural resources, Alexander Mueller, in the preface. "The rural poor, who are the most vulnerable, are likely to be disproportionately affected."

To improve the understanding of the impact of climate change on available water sources and agricultural productivity and enable policymakers to implement strategies that will make agricultural systems more resilient to climate change, *Climate change, water and food security* outlines the challenges that face agriculture and water supply, and considers options for adaptation and mitigation. "Substantial adaptation will be needed to ensure adequate supply and efficient utilization of what will, in many cases, be a declining resource," the authors write. Better soil and crop management, water storage, mixed agroforestry systems, improved data gathering, and investment in irrigation, are just some of the adaptation and mitigation options the book covers.

One key area highlighted by the report is 'water accounting' - the measurement of available water supplies and use of water. "Water accounting in most developing countries is very limited, and allocation procedures are non existent, ad hoc, or poorly developed," the report states. "Helping developing countries acquire good water practices and developing robust and flexible water allocation systems will be a first priority."

The State of Food and Agriculture 2010-11. Women in Agriculture Closing the gender gap for development. FAO, 2011, ISBN 9789251067680; 158 pages; Price US$75.00

Women make significant contributions to the rural economy in all developing country regions. Their roles differ across regions, yet they consistently have less access than men to the resources and opportunities they need to be more productive. Increasing women's access to land, livestock, education, financial services, extension, technology and rural employment would boost their productivity and generate gains in terms of agricultural production, food security, economic growth and social welfare. Closing the gender gap in agricultural inputs alone could lift 100–150 million people out of hunger.

No blueprint exists for closing the gender gap, but some basic principles are universal: governments, the international community and civil society should work together to eliminate discrimination under the law, to promote equal access to resources and opportunities, to ensure that agricultural policies and programmes are gender-aware, and to make women's voices heard as equal partners for sustainable development. Achieving gender equality and empowering women in agriculture is not only the right thing to do. It is also crucial for agricultural development and food security.

Indigenous peoples' food systems: the many dimensions of culture, diversity and environment for nutrition and health.

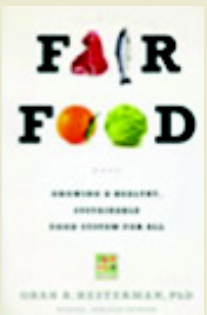
Food and Agriculture Organization of the United Nations Centre for Indigenous Peoples' Nutrition and Environment **Rome 2009** © FAO 2009. ISBN 978-92-5-106071-1

Food systems of Indigenous Peoples who retain connection to long-evolved cultures and patterns of living in local ecosystems present a treasure of knowledge that contributes to well-being and health, and can benefit all humankind. This book seeks to define and describe the diversity in food system use, nutrition and health in 12 rural case studies of Indigenous Peoples in different parts of the world as a window to global Indigenous Peoples' circumstances. A procedure for documenting Indigenous Peoples' food systems was developed by researchers working with the Centre for Indigenous Peoples' Nutrition and Environment (CINE) at McGill University, Canada, and the FAO. The procedure was adapted and applied in case studies located in Canada, Japan, Peru, India, Nigeria, Colombia, Thailand, Kenya, and the Federated States of Micronesia. The collective intent of this documentation is to show the inherent strengths of the local traditional food systems, how people think about and use these foods, the influx of industrial and purchased food, and the circumstances of the nutrition transition in indigenous communities. This research was completed with both qualitative and quantitative methods by Indigenous Peoples and their academic partners in the context of the second International Decade of the World's Indigenous Peoples, and the Declaration of the Rights of Indigenous Peoples adopted in 2007 by the General Assembly of the United Nations.

The State of Food Insecurity in the World. Addressing food insecurity in protracted crises

Food and Agriculture Organization of the United Nations, Rome, 2010. This edition of *The State of Food Insecurity in the World* focuses on people living in a group of countries in which the incidence of hunger is particularly high and persistent, and which face particular challenges in meeting the MDG targets – namely countries in protracted crisis. These countries are characterized by long-lasting or recurring crises, both natural and human-induced, and limited capacity to respond. In the 22 countries identified by this report as being in protracted crisis (or containing areas in protracted crisis), the most recent data show that more than 166 million people are undernourished, representing nearly 40 percent of the population of these countries and nearly 20 percent of all undernourished people in the world.

Fair food: Growing a healthy sustainable food system for all by Oran B Hesterman. Published by Public Affairs Books Website: www.publicaffairsbooks.com. 2011, ISBN 978 1610390064 (Hb), US$24.99



Fair food sets out four principles by which America's food system ought to run: equity, diversity, ecological integrity and economic viability. In illustrating the first of these principles, Hesterman cites the case of Philadelphia's Healthy Corner Store initiative, a free scheme for shop owners that provides them with refrigeration units to stock fresh fruit-salads, assistance in changing shop layout to make shelf space for healthy foods, marketing materials, consulting services and training to improve business practices.

This is complemented by Pennsylvania's Fresh Food Financing Initiative, the first state policy that provides grants and loans to expand healthy food choices in under-served neighbourhoods. This focus on the things that are working makes *Fair food* an inspiring and enjoyable read. There are numerous books setting out 'what's wrong' with global food production, but Hesterman - while offering a powerful summary of such issues from a north American perspective - describes initiatives across the country that are putting things right. They may be isolated cases but, in offering a model both to policymakers and to grassroots consumers, they deserve attention in the US and beyond.

Food sovereignty and uncultivated bio diversity in South Asia. Essays on the Poverty of Food Policy and the Wealth of the Social Landscape. *Farhad Mazhar, Daniel Buckles, P.V. Satheesh, and Farida Akhter* Academic Foundation/IDRC 2007. ISBN 978-8-17188-558-6. e-ISBN 978-1-55250-337-9. 84 pp.

This publication explores the meaning of agriculture and guides the reader into new territory, where food, ecology, and culture converge. In the food systems of South Asia, the margin between cultivated and uncultivated biodiversity dissolves through women's day-to-day practice of collecting and cooking food, constituting a feminine landscape. The authors bring this practice to light, and demonstrate the value of food production and consumption systems that are localized rather than globalized.

Based on extensive field research in India and Bangladesh, with and by farming communities, the book offers both people-based and evidence-based perspectives on the value of ecological farming, the survival strategies of the very poor, and the ongoing contribution of biodiversity to livelihoods. It also introduces new concepts such as "the social landscape" and "the ethical relations underlying production systems" relevant to key debates concerning the cultural politics of food sovereignty, land tenure, and the economics of food systems. The authors are leading activists and accomplished researchers with a long history of engagement with farming communities and the peasant world in South Asia and elsewhere.

Food wastage
A social evil and a criminal act!

V Rajagopal

'While the rich people have excess food to waste, the poorest have none and die unnoticed'

The food basket differs from region to region depending on the crops grown, consumer preferences and market structure. The word 'food' encompasses all the items raw or processed, consumed by human beings as a source of energy. So the purpose of taking food is to ensure good health through nutritious and tasteful materials. The ingredients include plant based, like cereals pulses, oils, vegetables and animal based like meat and fishes. Generally, the nature of food consumed by the people depends upon the predominant crops in the area, weather conditions and local preferences of flavor and taste. The food delicacies include international, national, regional and local choices, depending on the specific crops and local preferences as 'staple' food. In early years, there used to be distinct cuisines preferred by the people living in the area but with the migration of population across the globe, the consumption of different food items by the non-natives has become common. Food processing industry has become one of the lucrative business enterprises across the world catering to the needs of the public. People have adapted to new tastes, so much so the demand increased for all sorts of food items, sometimes competing with the traditional food basket. The example of pizza, an Italian delicacy has become popular in many Indian cities; so also Chinese delicacies. Within India, 'roti' used to be the staple food of North Indians and 'rice' that of South Indians, but now there is wide spread of food items of different States. These lead to regional imbalance in trade, sometimes with the traditional food losing the market. All the present problems of health reflect on life style based on food habits. This calls for debate on the overall food systems in a holistic way.

The food production in the country with over 230 million tons is claimed to be adequate to feed the population. But the hidden truth is that about 30% of the food is wasted in different forms, namely grains, fresh and processed items. The economic loss incurred due to food wastage is seldom highlighted and its implication in addressing the problem of chronic hunger is rarely understood. In addition to the post harvest loss ranging from 25 to 35% among the food grains both as fresh and dry materials, the wastage of perishable items like vegetables and fruits also adds to the overall food basket lost in the system. The main reason attributed to loss of quantity and quality of grains is the poor storage and transport facilities in the country. Even the major godowns like Food Corporation of India lack infrastructure facilities to protect the valuable food items. The wastage also includes the processed food items at domestic, community and large scale sectors which are ignored. Especially food prepared during events like marriages, seminars and high level meetings account for substantial wastage of food items. The rich people contribute to more wastage of food since they have less time and concern to realize the implications of valued food that can feed several thousand hungry people

The data from the International Food Policy Research Institute, Washington/New Delhi showed that while 20% of Indian population is undernourished based on calorie consumption (less than 1632 kcals per person per day, the cut off level), equally 20% of the population are overfed, that consume more than calorie requirement (more than 2500kcal). In terms of absolute values it runs to millions of people who are heavy eaters, denying thereby the poorest of the poor even a normal food per day. It is the rich to richest class come under the latter category who are by and large insensitive / indifferent to the wastage of food vis-à-vis the 'hunger' among the poorest. The farmers work hard to produce food to almost required levels but the consumers are the ones, along with the business agencies, who are responsible for the overall food inaccessibility to the most needy who are driven to chronic hunger. The policy planners failed in combating hunger which resulted in India being one of the 'hungriest' nation with dismal 66th position among the 88 countries for global hunger index, along with many African nations. Considering the fact that India hosts 54 billionaires, 153, 000 millionaires, besides millions of average rich and middle class people, the great nation should not have poverty and hunger.

In a country where over 400 million people go without food every day, out of which more than 50% are chronically hungry such huge wastage of food is a criminal act. In terms of the financial loss due to food wastage it is equivalent to feeding lakhs of hungry people. It is estimated that Rs.730 crore will be required to feed one million hungry persons per year at the subsidized rate of Rs.20 per person, twice a day. The country has money but no will to act.

Strategies

General public should be conscience of the wastage of food that can fill the stomach of hungry persons. The mindset of the citizens have to change with the awareness that millions of children and elders suffer from chronic hunger leading to malnutrition and various diseases. It may be made mandatory that all marriages and other parties set apart at least 20% food items for feeding the hungriest in the country to make India hunger- free by 2020, as a moral and social responsibility. The social activists have a great role to play in educating the public on the value of food to the poorest who have the right to live as others do. The media, both print and electronic, have to play a stellar role in addressing the issues of poverty and hunger in the country. Regional Food Systems need to be encouraged and supported.

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Seeds of empowerment

Biswamohan

Adivasi communities in India are collectively working towards bringing back biodiversity and local traditional food production systems. While farmers are recognised as repositories of local knowledge, people's organisations are taking the lead in spreading sustainable development practices. ORRISSA, which has facilitated such a people-led development process, attributes the success to the opportunities created for knowledge exchanges, peer interactions and to the flexible support provided by MISEREOR.

Adivasi woman addressing farmers gathering

Adivasi communities like those living in the districts of Malkangiri or Kandhamal, in the state of Orissa, depend on the forest for most of their needs. The rich biodiversity and abundance of natural resources support the livelihoods of local communities to this day. However, over the years, owing to the restrictions by the government, local communities lost free access to the forest resources.

Furthermore, the government had to clear portions of forest to establish more than 400 settlements to house the Bangladesh refugees. These resettlers looked at farming in a different way. They started following modern ways of agriculture and this did have influence on the farming practices being followed by *adivasis* in the region. Gradually, the traditional millet-centered mixed cropping systems, wherein up to twenty food species were grown, were largely replaced by paddy. All these practices had a serious effect on the availability of food.

Since 1987, the "Organisation for Rural Reconstruction and Integrated Social Service Activities" (ORRISSA) has been working with the tribal communities in Kondhamal, Malkangiri, and in the remote areas of the Ganjam, Khurda and Cuttack districts, covering around 200 villages. Its mission is to empower and enable the disadvantaged communities – whether these are *adivasis*, *dalits,* women, children or other vulnerable groups - to assert their rights over health, education and livelihoods. Over the years, the corporate access to forests, systematic marginalisation of traditional institutions and large scale corruption in the governance systems has seriously affected the livelihoods of the local population. In this context, ORRISSA's efforts have been directed at strengthening the local organisations and, through them, at promoting and bringing legitimacy to the local traditional knowledge and practices.

Building on local knowledge systems

Even though we started our work with a clear interest in the empowerment of the local population, after several years, and in spite of the positive results we have seen, we felt that we were not really following the path that we had initially set out to do. In 2003, we realised the need to strengthen the local traditional institutions. In achieving this, what we did was linking these institutions to the government services and helping them to access the provisions earmarked for them. Also, working with women meant forming self help groups and linking them to the various government programmes. What we missed out was "empowering" people, building on their knowledge and strengths. Our general approach of facilitating sustainable agriculture, for example, had not been an explorative process, and was not based on what was found in the field. We realised that, somewhere along the line, our programmes tended to introduce what we thought was the best option, instead of basing our work on people's needs and priorities. There was a feeling that, as an organisation, ORRISSA was probably only replacing the government initiatives with a few alternatives.

Back in 2006 we started a reflection process which we hoped would help us change our general approach. This shift in approach was to help us support these communities in terms of food sovereignty and governance rights. More than just discussing with the local communities themselves, this meant focusing on their perspectives and priorities. We heard about the importance of traditional seeds, and also about land rights. We were told that as women manage most of the plant resources, they had to be directly involved in the process of ensuring household food security. There were also many

voices calling for a stronger farmer-to-farmer network, and for promoting their own rights-based forums and organisations.

These concerns were shared in the workshop organised at Jashipur in Orissa in 2007, from which we drafted a plan of intervention for a people-led development process. In short, this meant taking different steps at the same time. We organised a reflection process within ORRISSA, by which our core group met twice a year. Teams at the district level had reflection meetings with all farmer leaders, while theme-specific workshops were organised by the local farmers' organisations. We also organised a series of exchange visits.

Trying to change to a new approach was not easy. Owing to the charity-driven approach of many external agencies, farmers in this region had become increasingly dependant on outside support. Local communities developed a very low self esteem and lost the pride they used to have in their own knowledge and traditions. Enabling them to take responsibility and lead a development process meant that these barriers had to be broken. This required us to understand their conditions, their needs and priorities, and to give due respect to their knowledge.

Frequent interactions helped farmers to become confident and share their knowledge. We also organised visits to places where such people-led processes were already in place. Visits to the Deccan Development Society (DDS) in southern India and to Dindori and Beej Bacho Andolon in the north opened a Pandora box of examples, showing how a farmer-led process can enrich the biodiversity of the area and facilitate the creative pursuits of farmers to produce food with their own resources, knowledge and practices. The process helped farmers regain their lost self esteem. Also, the vast knowledge of the tribal women in selecting and breeding local seed varieties and their role in different stages of crop production started gaining due recognition. We understood that the local biodiversity and the local farming systems are inter-connected.

Harvest of local variety of paddy

As a team, we started to explore the potential of local knowledge systems for sustaining farming and to address the food security concerns.

Exchanging seeds, exchanging knowledge

The process of strengthening farmer organisations has been based on a series of village meetings and the preparation of annual action plans. Organising farmers to take control of the local food production systems on the basis of their traditional wisdom was not easy. But the generous leadership of the older farmers kept the processes moving. Women also played an active role in all meetings, highlighting the need for food crops which can be stored for a longer period and repeating the importance of millets in providing nutritious food to children. They brought into focus the rising depletion of the traditional crops and plant diversity. Communities participated actively in identifying the seed diversity through seed mapping exercises (See Box). We also facilitated biodiversity mapping sessions to help farmers recognise the vast diversity of food and forest products available. These discussions motivated farmers to take the lead in multiplying the local seeds, exchange with fellow farmers and spread local food production systems. Additionally, food festivals were also celebrated to inculcate the interest in the younger generation on millet based foods. All these processes provided an opportunity for the communities to meet, discuss and exchange seeds and knowledge. More importantly, it helped in building solidarity among the tribal farmers.

Moving beyond food security issues, ORRISSA through its advocacy and networking programme, has helped farmer organisations to build linkages with other organisations and NGOs. Today, farmers are not only aware of the issues beyond their control which influences their livelihoods but are also raising their voice against such developments – for example, campaigning in favour of the National Rural Employment Guarantee Act (NREGA), or campaigning against GM seeds.

Positive results

Looking back at our work during the past few years, we can see many positive results in the region. Overall, there are six farmer organisations established in the region, with more than 5000 farmers as members. All of them are busy promoting farming systems based on traditional agriculture, and are managing different community fairs themselves (see box on p.36). Farmers have started growing different crop varieties under mixed cropping systems. They cultivate pulses like black gram, arhar, kidney beans and runner beans with cereals like corn and paddy. Some farmers mix millets with vegetables and greens like *bhendi*. The revival of the millet-based farming systems enabled 739 small *adivasi* families (in 2008 in Malkangiri) to harvest at least two crops out of the 6 to 14 crops grown when most of the regular farms failed to produce any. The mix of crops helped in retaining soil moisture and yielded some returns even during the times of drought, thus emphasising the relevance of traditional systems of farming.

Along with farming, women have taken up several other supplementary activities to protect the biodiversity. Traditionally,

Local communities mapping seed diversity

More seed diversity

Seed diversity maps – Our first step in promoting sustainable agriculture is in analysing the diverse seed stocks available with the farmers. Farmer groups took stock of the seeds available in their villages, describing their characteristics. Seeds were selected based on the household needs, land type and other farm realities. In the process we recognised that the tribal women had rich knowledge of local seeds. To enable this knowledge to reach the younger generations, the local organisations, or gram sanghatans, identified around 28 tribal women to play the role of Seed Mothers, also popularly known as Bihana Maa. The process yielded some interesting results. Even in villages where most of the millet varieties seemed to be lost, it was found that most women were still harvesting millet crops from small patches of land. In total, we were able to identify 102 varieties of traditional paddy, 18 varieties of pulses, 6 varieties of millet, 24 varieties of vegetables, 4 varieties of tuber crops, and 3 varieties of oil seeds.

Seed exchanges - Community seed fairs were organised to facilitate seed exchanges on a wider scale. These seed fairs were celebrated like the traditional festivals to attract as many farmers as possible. More than 20,000 farmers participated in the fair at Malkangiri, making it look like a state level event, where hundreds of traditional seeds were exchanged. Completely organised by the farmers themselves, the seed fairs of Malkangiri and Kandhamal were very successful. A total of 231 farmers, for example, exchanged local aromatic varieties of paddy seeds. These fairs were also used as a platform to sensitise people on the need to protect forests. About thirty adivasi women of Ranginiguda displayed 105 varieties of medicinal plant materials (crops, plants, leaves, roots, fruits, seeds, skin, wood & latex) along with 15 varieties of roots, 8 varieties of leaves, mushrooms, cashew, tamarind, mahua, and others.

every *adivasi* household has its own backyard garden which hosts enormous crop diversity. Such "gharbadi" systems are being taken up again by these motivated women. Women have also raised nurseries of tree plants to promote plantations for checking soil erosion. In the nurseries, a variety of trees like fodder, fuel and fruit bearing trees are grown and distributed among the villagers who then actively participated in planting and protecting these trees.

With increased awareness on larger issues affecting their farming livelihoods, the farmer leaders are actively participating in campaigns. They participated in the state level campaigns as well as at the national level public hearing on Bt brinjal conducted at Bhubaneswar by the Minister of Environment and Forest, Government of India. To spread the awareness further, they have taken up campaigns at the village, gram panchayat and district level against GMO seeds and Bt crops. The farmers of Malkangiri have repeatedly asserted their traditional rights over the village forests, actively protesting against the presence of outside companies.

The process of exploring the knowledge on local seed is already expanding in to the neighbourhood of our operational area. In Malkangiri, the process of multiplying the local seeds with high productivity traits is being taken up by four more organisations. Around 1,500 farmers (from six blocks of Malkangiri and out side) have exchanged seeds during the 2009 community seed festival in Malkangiri. More than one hundred *adivasi* farmers (brought by 10 different NGOs) from six districts of the state of Orissa participated in the Malkangiri Seed Festival of 2009, together with a group from Madhya Pradesh. These are very encouraging signs.

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