Impact of Organic Agriculture

(A Research Report)

Food is your health
health is organic food
grow it for tomorrow

and

Tomorrow is NOW

PIONEER IN ORGANIC AGRICULTURE

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Research Report on Impact of Organic Agriculture 2016

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ABBREVIATIONS AND ACRONYMS

OA	Organic Agriculture
MDG	Millennium Development Goals
VLC	Village Learning Center
WTO	World Trade Organization
PAN-AP	Pesticide Action Network-Asia Pacific
SAAG	Sustainable Agriculture Action Group
IFPRI	International Food Policy Research Institute
FAO	Food and Agriculture Organization
IFAD	International Fund for Agricultural Development
SRI	System of Rice Intensification
SCI	System of Crop Intensification
VDP	Village Development Plan
GMO	Genetically Modified Organisms
GE	Genetically Engineered
WADA	Women in Agriculture & Development Alternatives
SAAPE	South Asia Alliance for Poverty Eradication
IPR	Intellectual Property Rights
BEA	Biodiversity Based Ecological Agriculture

Executive Summary

The organic agricultural work, which was initiated by a group of activists in Lok Sanjh in early 2000, is increasingly receiving a wider attention from the rural communities in the working areas of LSF. The other stakeholders including private sector, governments, and civil society organizations are also attracted by the work as well. This study done in this regards reveals that Organic Agriculture is uniquely pro-poor and has strong potential to meet multi policy objectives that go beyond reducing poverty reduction. With regards to Organic Agriculture's contribution to improvements in income, food security, and environmental sustainability, the linkages are fairly developed. Organic Agriculture's contribution to improved profitability and therefore income, due to premium price and lower cost of production, is widely established and accepted by the small farmers. It is also generally accepted that improved employment opportunities in rural areas through Organic Agriculture could provide rural population with jobs, reducing rural-urban migration and alleviating population pressures in urban slums (target 11 of MDG 7).

Organic Agriculture's contribution to health improvements (MDG 4 and 5) due to reduced exposure to pesticides is also widely recognized and very well documented. OA's contribution to maternal and child health due to improved quality of food is widely perceived by consumers of OA products. Then for gender mainstreaming, OA could empower women by providing income opportunities but its impacts will depend on initial gender relations, as reflected in gender-based divisions of labour, decision-making, housework, and intra-household allocation of resources and assets.

The OA has the potential to address multiple MDG targets, but the extents of impacts vary greatly due to several factors i.e. nature of the agro-ecosystem, type of crop, stage of development, initial poverty status, etc. Most importantly, the extents of impacts on MDG would depend on the share of agriculture income in total household income.

In general, OA development appears to be more successful in marginal areas where agro-chemicals have not been extensively used and where employment opportunity is limited. These marginal areas are also where the poorest of the poor reside and where the MDGs targets are at stake. This provides a case for donors and government to look more seriously into supporting OA as a development tool for this group of rural poor. This study strongly says that, **Organic agriculture Promotes right to food and Food Sovereignty,** as this is the power of the people and communities to assert and realize the right to food and to produce food. It is the power of the people and communities fighting the power of corporations and other forces that destroy the people's food production systems and deny them food and life.As such, one of the key aspects in the battle against food insecurity and poverty is to push for the implementation of the Right to Food at the country level. Therefore this needs a heart of partnership between donor and Lok Sanjh.

The general observations of the study are as following,

1. The impact of the organic agriculture on the rural communities is commendable. The rate of success, however, varied from one activity to the other. But program wise women remained at the top followed by the Village Food Security Program.
2. In the order of acceptance by communities, goat program, compost and bio-spray, seed banks, grain banks, farm nurseries and green houses are in the irrigated areas (District Sheikhupura and Toba Tek Singh).
3. In rain-fed area (Tehsil Fateh Jang), poultry farming and kitchen gardening remained at the top followed by goat farming, grain banks, seed banks and water harvesting.
4. The concept of organic farming has been accepted as a gradual process by the farmers in the program areas. Their main concern was the low production. Although the availability of organic products for the market was an indicator of successful launching of this program in the area. The marketing of organic rice, wheat, maize, Jawar, honey, milk, eggs and other product is getting increased day by day.
5. Farmer field schools remained very successful in farmer's capacity building and enhancing their interest in making compost, bio-spray, establishment of seed and grain banks. The interventions proved to be the successful indicators of organic agriculture.

OUR MISSION

People-centered development to reduce poverty, enhance food security through strengthening local democracy, empowering women and sustainable use of natural resources.

Helping Farmers to

- ✓ *Regain Control over their resources*
- ✓ *Revive Rural Economies*
- ✓ *Strengthen Local Democracies*

Reviving Traditional Economies & Food Production Systems

Successful Experiments

Awareness

Struggles

Hopes

Introduction

Lok Sanjh Foundation (LSF) was established in 1996. It is a farmer-based organization, initially started working with farming communities. It has the experience to build capacity of the potential and poor small farmers to fight against poverty, food insecurity and problems inherited from the Green Revolution (GR) era.

There has been a lot of confusion about the usage and impact of the Green Revolution technologies. It is generally believed by the farming community that GR has negatively affected natural resource base and Agro biodiversity. One of the major issues was the problem of growing use of pesticides, which was ruining the farming lands. The globalization, WTO and other developments have further exacerbated the situation. The food production systems that farmers developed over generations got directly under threat. Farmers were facing falling farm prices and rising costs of production.

Also rural poverty has been increasing in Pakistan. It was 28 percent in 1994, while in was recorded as 40 percent in 2005. Small and landless farmers were more food insecure than before. Farmers were feeling helpless and public research and extension organizations were not ready to consider it a problem or to offer some solutions as a service.

LSF Working Strategy

The working strategy of the LSF is to revive the traditional economies by enhancing local skills based on traditional knowledge and practices, through educating and supporting farmers, with a special focus on the women empowerment from poor farming families. Lok Sanjh as a strategy is building capacity of the farmers by using local knowledge and the success stories from elsewhere in South Asia in pest management, soil rebuilding, crop rotation and climate change efficient technologies.

Many local plants-based formulations have been prepared and tested, that have been successfully replicated by other

farmers. The interventions have also been tested on different crops at the Center of Agricultural Research and Technologies (CART) to conduct farmers-led research. The farmers who considered crop production impossible without pesticides now, got convinced that it was still possible to go back to the safer and cleaner crop production technologies. The women farmers have been particularly engaged in vegetable production, goats farming and poultry production. In this process, biodiversity festivals, Village of Hope festivals and women farmers' conferences proved to be very useful for women involvement.

Collaboration, Alliances and Networking

Lok Sanjh has established adequately strong relationships with farmers, farmers, organizations, NGOs and key government institutions. The University of Agriculture, Faisalabad, has initiated research on ecological agriculture in collaboration with LSF.

Another remarkable achievement is that the Foundation got its way into new alliances and networks at the international level like, PAN-AP, SAAG, South Asian Alliance for Poverty Eradication (SAAPE).

Situational Analysis

During the past few decades, the Green Revolution has brought about significant changes in the world's food production systems. It is recognized that while the Green Revolution has benefited better-off farmers in irrigated areas, it has by-passed the poor in marginal areas. Low-external input for sustainable agriculture has long been viewed as an alternative for areas where the Green Revolution technologies are not feasible. More recently, one particular alternative that has gained interest is organic agriculture, due to its commercial viability. Most farmers in marginal areas practice traditional agriculture methods using very little or no agrochemicals. By adopting organic agriculture, which requires less financial inputs while placing more reliance on natural and human resources, farmers could

move towards more sustainable agricultural practices (Scialabba, 2000). Lok Sanjh is improving the agricultural production system in marginal areas in a sustainable manner and providing market access for the poor that is a key to the mass reduction of poverty.

Since the 1970s the natural and agro-ecosystems have been suffering degradation followed by rapid population growth and deterioration in the global economic situation. As the population grew, natural forest and woodlands were cleared for agriculture use, fuel wood, timber and human settlements. Clearing forests and woodlands and reclaiming swamps changed natural ecosystems, destroying biodiversity, reducing the water table and altering water flow dynamics. Over time, wildlife species have been declining and swamp soils have been drying up, shrinking and becoming sterile due to oxidation, acid or salt precipitation. The mass clearing of forests, woodlands and wetlands has resulted in an increasing scarcity of fuel wood, timber, and drinking water from natural wells and springs, which are increasingly drying up at a much faster rate during the dry season. By 1997, many farmers in the Pakistan agriculture were faced with a problem of increasing vulnerability characterized by high poverty levels and food insecurity for which the causes are many.

Green Revolution and Agriculture

In the past few decades, massive investment has gone into promoting Green

Revolution technologies based on the use of chemicals, extensive irrigation, and the use of high yielding varieties, including genetically modified (GM) plant varieties as well. While there is no doubt that this strategy has led to substantial productivity gains over the past 50 years and has eliminated starvation in many countries. The Green Revolution technologies will remain as the major production system in the world, but most recent evidence shows that the Green Revolution has not been effective as a strategy for poverty reduction for majority of the world's rural poor. There is growing evidence that the Green Revolution has, at its worst, increased inequality, worsened absolute poverty, and resulted in environmental degradation (IFPRI, 2002).

First of all, while Green Revolution methods have been effective in increasing yields in agriculturally optimal areas, they have been less effective in the case of marginalized and resource-poor areas where farmers have no access to modern inputs and technologies, (IFAD, 2005b; Scialabba and Hattam, 2002). FAO (2000)

Even in Green Revolution regions, numerous small, poorly equipped and very low-income farms were unable to gain access to the new means of production. They were unable to invest and progress, they saw their incomes fall as a result of the drop in real agricultural prices. Many of them sank to levels of extreme poverty and were eliminated. Above all, vast hilly and barely accessible regions of rainfed or scarcely irrigated agriculture were essentially bypassed by the Green

Revolution. The varieties cultivated in these regions (millet, sorghum, taro, sweet potato, yam, plantain, cassava) benefited at margins. The same was true for varieties of major cereals (wheat, maize, rice) that were adapted to difficult local conditions (altitude, drought, salinization, aridity, waterlogging).

Second, even in those areas, which enjoyed substantial productivity gains, in the long-run these gains did not always translate into sustainable improvements in rural poverty. On the one hand, real declines in the prices of agricultural commodities and increasing crop failures due to pests and diseases resulted in a significant fall in farmers÷ revenues Because high yielding varieties often need regular or increasing inputs of chemical fertilizers and pest control, that stress farmers to borrow heavily in order to sustain productivity. In the long-run, this cost-price squeeze and the declining price trend of commodities in the world market led to significant declines in terms of trade and incomes of small farmers.

Third and more importantly, the Green Revolution's gains have come at the cost of extensive environmental degradation and considerable health problems due to exposure to agro-chemicals, IFPRI (2002). Excessive and inappropriate use of fertilizers and pesticides has polluted waterways, poisoned agricultural workers, and killed beneficial insects and other wildlife. Irrigation practices have led to salt build-up and eventually abandoned some of the best agriculture lands. Heavy dependence on a few major cereal varieties has led to the loss of on farm biodiversity. And since these costs are not internalized in the price of food, it is the taxpayers and future generations who will end up footing the bill.

Then majority of the poor are illiterate and have no access to adequate training on agrochemical use, they are disproportionately affected by negative health and environmental consequences of the Green Revolution. The inappropriate use of agrochemicals and the premature introduction of mechanization have led to a deeper level of poverty.

With regards to health, one of the key pillars of poverty reduction, it could also be argued that the poor are in greater need of quality food to maintain or improve their health compared to an average citizen. For the poor, Organic Agriculture systems, which are generally more diversified, could translate into higher levels of nutrition intake.

Given the above-mentioned reasons, low-external inputs sustainable agriculture strategies have emerged as viable alternatives to the Green Revolution, particularly for the rural poor in marginal areas. For farmers living in these areas, any strategy to improve agricultural production must therefore be based on the use of low-cost and locally available technologies and inputs (Pretty, 2002), in addition to being safe for humans and the environment.

A Europe-wide study that assessed the environmental and resource use impacts of different farming systems revealed that organic farming performs better

than conventional farming across several environmental indicators (Impact *on Biodiversity* MacRae, et al.'s (2004). It argues that organic farming led to biodiversity improvements for most of the studied organisms. Results show that organic farming often has positive effects on species richness and abundance as on average, organisms were 50% more abundant in organic farming systems.

The Challenges

After years of work with farming communities, LSF and communities have realized that a gradual change in climate is putting a variety of different challenges for small farming communities. The felt problems and threats are as followin,

1. Lands are low in organic matter after overuse of fertilizers.
2. Underutilized labour (women's displacemen from their jobs).
3. Lack of organization and weak business skills; (skills to cope with threats).
4. Lack of resources (Loss of seed wealth and ecological agriculture).
5. Disabling environment and lack of investment on smallholder agriculture (land erosion and irrigation and water harvesting systems).
6. Outbreaks of crop and animal pests and diseases;(loss of biodiversity and soil organic matter)

The degradation of the natural resource base due to inappropriate farming practices like monoculture and misuse of agrochemicals is resulting in to low crop yields and degraded pastures.

This state of affair has greatly undermined the livelihood of the rural communities and demands a new approach to address the deteriorating food production systems.

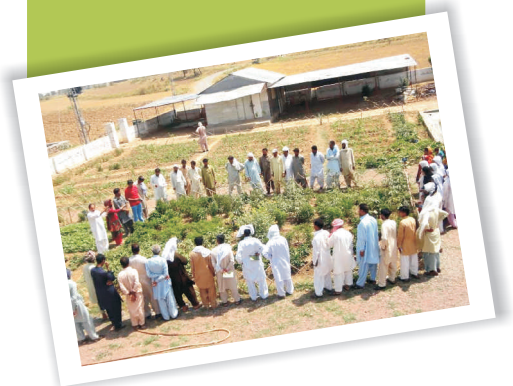
Initially, the work that Lok Sanjh started with farmers in 30 villages, now it is expanded to more than 250 villages. Through the process traditinal economies have been revived and sustained. Target groups consist of both female

and male small farmers of Pakistan. More than 20,000 small farm families are directly working with Lok Sanjh Foundation to get the benefits of indigenous knowledge on bio-pesticides, local seed saving, water harvest and reviving biodiversity of the areas.

Project Aims and Objectives

LSF is successfully implementing the project "Food security in Changing Climate' with the aim to

a. Improve livelihoods of the smallholder farmers through increased agriculture productivity and sustainable natural resource management.
b. To provide knowledge and skills to enable communities to manage their environment and natural resources in sustainable manner;
c. To ensure active participation of both men and women as a family unit.
d. To ensure that successful projects and practices are replicated, where conditions permit, and unsuccessful ones be avoided.



Methodology

The methodology consists of both qualitative and quantitative methods to obtain information from the field areas. The participatory technique was used as a tool to recognize people's knowled that is well respected among the village communities for their integrity.

Process comprised of;

- Direct individual interviews,
- Observations from the field,
- Participatory Rural Appraisal
- A review of secondary data.

Efforts were made to involve as many stakeholders as possible. Interviews were based on both specific and open questions to make perfect assessments as much as possible. The information was recorded as notes, videos and photographs (where necessary and/or of significance). For this purpose, extensive field visits were conducted in the program area. The information provided by the stakeholders was verified from the independent sources as well as to determine the actual impact of the interventions launched by the LSF in the program area.

Cross verification process further validated the collected information. The information collected was regularly computed on daily basis on return from the field. Though it was challenging to use different techniques and refine the data for analysis but where survey techniques helped find variation of response, participatory techniques were quite useful to set upper and lower limits of quantitative data on selected issues.

A total of 100 respondents were interviewed (60 from South Punjab and 40 from Northern Punjab with 50% of the women farmers). The study was conducted with following objectives.

Objectives of the Study

The main survey questions revolved around following objectives;

1. To assess farmers perception about organic agriculture.
2. To assess impact of organic agriculture on smallholder s' food security and livelihoods
3. By which pathways does organic agriculture lead to livelihood benefits?
4. Which strategies can be adopted to strengthen these

pathways?

Survey Team

A gender-balanced team of 4 persons (social Scientists) was formed, including, one senior consultant with one male and two female team members to conduct the survey in two of the zones.

Key-Informants

The key informants were the people who actually had their own opinion about the work that farmers in their villages are doing under guidance of Lok Sanjh. Therefore, they shared the true facts about their beliefs, attitudes and behaviour regarding organic agriculture.

Data Collection

Following methods were used to collect information.

A check list was used to collect information/data and case studies were recorded as well.

1. In-Depth Interviews

These Interviews were held with individual male and female farmers in their houses and farms. The farmers shared their views openly and data was recorded with their success, failure and case studies.

2. Direct Observation

In light of the discussions and interviews held with beneficiaries and different stakeholders, the field areas of the beneficiaries were visited and observed with deep concentration. This tool proved to be very practical way to analyze the ground situation.

3. Case Studies

Reference to the specific activities implemented by Lok Sanjh a few of the case studies have also been documented to analyze the views of the beneficiaries and cost benefit ratio after adapting organic agricultural practices.

4.Participatory Rural Appraisal (PRA)

Participatory Rapid Appraisal) and RRA (Rapid Rural Appraisal) were used as a quick way to get all information by involving communities and giving of a voice to those members who are not usually heard.

5.Focus Group Discussions

A pre-prepared checklist was used to collect the subject information. The tool remained successful to understand the situation and real impact of organic agriculture on the communities as a whole.

The participants were encouraged to express their opinions freely. But information provided was also cross checked. The discussions were recorded and analyzed later.

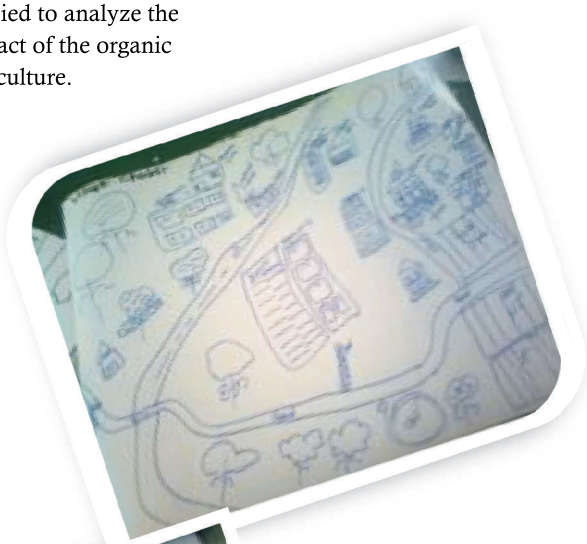
6. Social Mapping

The technique was used to analyze village development before and after the project implementation.

Moreover it was facilitated to highlight problems of the poor communities for providing solutions and taking collective action.

Data Analysis

The data has been analyzed both in a quantitative and qualitative way as per need of the observations. Simple percentage test have been applied to analyze the impact of the organic agriculture.



Findings of the Study

During implementation, the project was continuously monitored and changes in approaches were revised where necessary but in light of strategic planning. This ensured that the project remained on track and addressed the key issues,(promotion of organic agriculture).

The promotion of indigenous crop varieties contributed to improve the food security and the local agro biodiversity of the communities.

In general the study finds that employing organic farming methods are leading to higher profits for farmers not only because of price premiums, but also because of lower production costs (Rosegrant, 2005; von Braun, 2003).

Organic Agriculture technologies are decreasing the costs of production as chemical inputs are substituted by locally available and cheaper organic inputs and more intensive labor, which the poor often have, in abundance. Adoption of Organic Agriculture systems has also lower the need for credit, which is often expensive and difficult to obtain for small and marginalized farmers.

Organic Agriculture Promotes learning by doing

As an impact of organic agriculture, the farmers are taking more interest to learn the low cost production technologies for an affordable and sustainable farming through farmer field schools. The communities themselves organize these Schools as per seasons and needs to share their problems and analyze the impacts of ecological agriculture. The women are an integral part of these learnings and enhancing their knowledge on production, processing and preservation of local seeds.

The Zone Wise Targets of the Project by gender were as below.

Project Area Targets	Capacity Building of Farmers	Capacity Building of Women Farmers		Capacity Building of Men Farmers	
	Total	Female	Percentage	Male	Percentage
South Punjab	300	150	50%	150	50%
South Punjab	200	100	50%	100	50%

Savings by Using Organic Compost (South Punjab)

	Total	Women	Men	Remarks
No of respondents interviewed	60	30	30	This is the main indicator of organic farming and 100% farmers working with Lok Sanjh are doing this practice. The table shows their gross savings Rs 4500/acer/crop/season, which is the cost of one DAP bag, while their net saving is Rs 3500 as they have to pay Rs 1000 for the cow dung.
Saving Rs 4500/acer/crop/season	60 (100%)	30 (100%)	30 (100%)	
Beneficiaries from 300	300 (100%)	150 (100%)	150(100%)	
Total no of famers using dry compost trained manpower	300	150	150	

Savings by Using Organic Compost (North Punjab)

	Total	Women	Men	Remarks
No of respondents interviewed	4o	20	20	This is the main indicator of organic farming and 100% farmers working with Lok Sanjh are doing this practice. The table shows their gross savings Rs 4500/acer/crop/season, which is the cost of one DAP bag, while their net saving is Rs 3500 as they have to pay Rs 1000 for the cow dung.
Saving Rs 4500/acer/crop/season	40(100%)	20(100%)	20(100%)	
Beneficiaries from 300	200(100%)	100(100%)	100(100%)	
Total no of famers using dry compost trained manpower	200	100	100	

During Farmer Field Schools, preparation of bio-pesticides by using Neem (*Azadirachta indica*), Aak (*Calotropis procera*), Tobacco (*Nicotiana tabacum*) leaves and Garlic (*Allium sativum*) along with some other commonly used items **is one of the major successes of LSF activities to promote organic farming.** Many farmers (South Punjab) are being supported by LSF by providing farmers with Neem tree nurseries**.**

The respondent appreciated this idea by saying that,

1. It initiates farmers discussion on different problems and issues.
2. It facilitate to test the different types of composts and bio-pesticides on different crops especially at flowering stage.
3. It facilitate the cost-benefit analysis of different Conventional techniques.
4. To learn different climate efficient crop production technologies.
5. To identify different IPM techniques to aviod the use of pesticides.
6. To learn to use the suitable dozes of composot/orgainc tonic at appropriate time.

The idea of Farmer Field Schools has been welcomed by the farmers and **more than 2500 farmers have benefitted from it.** These farmers are now doing organic farming with the cost effective methods and an increased yield.

Regeneration of Biodiversity
A Livelihood Change

As an impact of the organic agriculture, more farmers are adapting to bio-diversity farms that is also promoting farmers interest for research. So, their knowledge is enhanced by learning the positive effects of agro-biodiversity, varieties research and ecological agriculture. So far 40 research farms have been developed in Punjab by adopting various techniques to revive indigenous practices and conserve traditional knowledge.

My name is Muhammad Abbas. I am small farmer of village Cheecho ki melyan. I have four acres of land. I used to do the hybrid seeds and green technologies by following mono cropping. Major crops were wheat in Rabi and cotton in Kharif season. Later I realized that it demanded a heavy dosage of fertilizers and pesticides and its increasing day by day while land is getting degraded.

After some times I got a chance to participate in Farmer field school being conducted in a nearby village by Lok Sanjh Foundation. There, I learned about the impact of Green Revolution on the farm biodiversity, land degradation, high cost of fertilizer and pesticides. It was just like as they have come to know my story. The good thing they shared was that Lok Sanjh is helping out farmers from this situation. I made an analysis of what I have lost already and decided to adopt the techniques of Biodiversity Based Ecological Agriculture.

With the continuous support of LSF staff, I generated a system of Ecological Agriculture on my two acres of land with crop diversity with fruit and vegetables of all seasons. I have supplemented this system with healthy livestock and local breed of poultry. This initiative increased my profit margin by reducing the cost of production. Now I'm of the view that natural farming has made me self-sufficient & raised the food security level of my family by giving more choice of food. Now I've to buy only two things from the market, salt and iron made things. I am no more dependent on the markets for fertilizers and sprays that actually is my saving and adding to income as well.

Organic and Profitability

There is substantial evidence linking Organic Agriculture with improvements in the profitability and income of poor farmers in Lok Sanjh working areas. The different case studies of the respondent farmers show that some organic farmers groups were able to double their income due to the lower cost of organic inputs and less needs of credit.

Therefore the adoption of organic agriculture is not only benefitting farmers on input cost but also to get more premium prices in the market due to its safe production. For instance, the case of rice farmers in the central Punjab area, who adopted organic practices, save on production costs and did not purchase external inputs but achieved stable yields. This has lessened the risk of income losses associated with seasonal variations or crop failures. On the one hand, diversification, which is common in organic systems, has been shown to increase farm production while it also allows farmers to derive extra income from the sale of additional products and wild crops. The organic systems also favour the use of traditional varieties, which are typically more resistant to local pests and diseases. And since farmers as a practice of Organic Agriculture are saving their own seeds, therefore there is a gradual increase in crop resistance to pests and diseases by breeding these seeds for "horizontal resistance"

Organic and the Broader Economy

Organic agriculture has the potential to generate secondary effects in the broader rural economy and contribute more to local economies through total sales, net revenue, farm value, taxes paid, hired labor, purchases of inputs, repair and maintenance services. Horrigan, et al., (2003) likewise argue that profits generated by small-scale producers are more likely to remain in the community and create multiplier effects in the local economy.

Organic Agriculture Promotes Early Production

As the farmers are a bit relaxed on their production costs and threat of crop failure, so they are convinced to produce and market off-season vegetable through,

1 Green houses support farmers in raising the farm income by helping them producing off-season vegetables and increasing farm diversity.

2 Farmers are able to design low cost green houses to produce early season vegetables to benefit from higher market process.

Fighting with input cost, Poverty and Hunger

Farmer Saeed from Rasul pur Jettan says that Lok Sanjh has helped farmers in production and marketing of off-season vegetable by introduction of low cost green houses structures. Through this help i am able to raise both my farm income and diversity.

I am thankful to Lok sanjh and fully convinced that green house program and off-season vegetable production can bring more profits as compared to conventional system

I am happy to state that women of my area are getting involved in small-scale green houses in their yards to enhancing heir income.

The vegetables produces in this way require low cost input but are high priced due to a increasing demand for organic agriculture.

Organic Agriculture Promotes Sustainable Livelihood

Organic agriculture is a proved way to healthier soils, plants, animals and people. Therefore it helps to achieve desired livelihood outcomes such as poverty reduction, food security and environmental conservation. The adoption of organic agriculture by the farmers has put them on a sustainable livelihood as they are recovering from stress and shocks. The organic agriculture has also enhanced their capabilities and assets without undermining the natural resource base.

Organic Farming to Secure Food

Farmer Amir from TTS has cultivated a variety of garlic and was able to get 320 kg produce from a small part (165 x 165 feet) of land, which he sold in market for Rs. 15000. Before this, he had quit farming because of ever increasing expenditures on fertilizers and chemical pesticides. He used to spend more than what he was getting out of his field. But after attending meetings and sessions organized by LSF he was motivated to practice various interventions of organic farming introduced by LSF staff. From his earning, he has been able to setup a grocery shop where along with other grocery items he sells organic vegetables of his biodiversity farm.

This farmer is involved to train other farmers on different aspects of ecological farming. These farmers are earning Rs. 25000/ month from their farms since they have shifted from chemical- based agriculture to organic agriculture. They are using organic compost and bio-spray instead of synthetic products, which has reduced the expenditures to a great extent.

Environmental Impact of Organic Agriculture

Impact on Soil Fertility

The use of organic matter increases the soil fertility and decreases the land erosion. It also leads to reduction of greenhouse gas emission, greater adaptive capacity in the face of climate variability and significant carbon and nitrogen sequestration potential.

Mr Nisar a Farmer from South Punjab areas reported that Lok Sanjh is supporting small farmers for an integrated farming system by providing poultry and livestock. This is supporting Organic Agriculture, that has the potential to contribute to environmental sustainability by following ways ,

1. Protecting the long-term fertility of soils by maintaining organic matter levels, fostering soil biological activity and careful mechanical intervention;

2. Providing crop nutrients indirectly by using relatively insoluble nutrient sources which are made available to the plant by the action of soil microorganisms;

3. Nitrogen self-sufficiency through nitrogen fixation, as well as effective recycling of organic materials including crop residues and livestock wastes

Low Carbon Agricultural Interventions

System of Rice Intensification (SRI) and SCI have been proved very successful to supplement small farmers resources in the promotion of organic agriculture and vice versa. The farmers are happy with low input cost with greater yields that is building more resilience in the face of climate change and mobilizing them for organic agriculture. These interventions help reduce the methane emission in rice crop.

According to farmers these interventions also preventing the crop from lodging and infestation of pest and fungal attacks at ripening stage, as the wide spacing among plants helps for better root germination with higher yield. In wheat it helps keep moisture available for the plants and better respond to sudden temperature rise. Therefore this type of interventions is taken as an impact of organic agriculture because it is also reducing their production cost and helping small farmer's sustainable livelihood.

Organic Agriculture Ensures Food Security

The farmers say that by adopting Organic agriculture there is a lot of improvements in food production through one or more of the following mechanisms:

1. Intensification of a single component of the farm system — such as home-garden intensification with vegetables and trees;
2. The kitchen gardening is the activity from which LSF start to introduce the organic agriculture. Therefore 100% farmers are doing kitchen gardening with the help of their female family members, who say that,
    a. They are now more food secure as vegetables being an important part of their daily food consumption.
    b. There are increased food choices for rural families and for women to sell the extra vegetables. That is helping women empowerment and building their confidence.

I am a poor women (Saboori) of village Lassa from North Punjab . Before working with LSF, my family was always food insecure and we used to go hungry most of the time. After getting the seed and water harvesting support from LSF I started doing kitchen gardening on a small part of my land. This has improved the nutritional status of my family.

This small plots of kitchen gardening is contributing to save the extra amount being spent on the purchase of vegetables, which is almost Rs 100/day. Besides, I am saving my own seeds and selling surplus seeds and vegetable to the neighbour that is again Rs 100/day.

I am happy that my neighboring women are replicating this model and are satisfy to get farm fresh vegetables. Many of the women generate income by selling the surplus vegetables in the village and in the local market. These women also serve as a source of motivation for other women of the area.

We all are trained by the Lok Sanjh in preparation of chemical free pesticides which can be produced locally by using available resources. And that s another source to save our money.

Farmers doing Kitchen Gardening (North Punjab)				
	Total	**Women**	**Men**	**Remarks**
No of respondents interviewed	40(200)	20(100)	20(100)	The activity is very successful in both of the Novib s working areas.. This has also regenerated employment and empowered women to have more food choices and fulfill family nutritional needs.
Using rain water	40 (100%)	20(100%)	20(100%)	
Beneficiaries from 200	200(100%)	100(100%)	100(100%)	
Total trained manpower	200	100	100	

Farmers doing Kitchen Gardening (South Punjab)				
	Total	**Women**	**Men**	**Remarks**
No of respondents interviewed	60(300)	30(150)	30(150)	The activity is very successful in both of the Novib s working areas.. This has also regenerated employment and empowered women to have more food choices and fulfill family nutritional needs.
Earning/saving Rs 3000/month	60(100%)	30(100%)	30(100%)	
Beneficiaries from 300	300(100%)	150(100%)	150(100%)	
Total trained manpower	300	150	150	

Organic agriculture Reduces Child Mortality and Improves Maternal Health

Women in the Lok Sanjh working areas shared that women, infants and children get marginalized in case of food shortages and most of the children stay malnourished. While women are either anemic or underweight and always suffer from reproductive health problems due to the malnutrition.

Now by the introduction of Lok sanjhs' intervention (kitchen gardening, poultry and goat) program by Lok Sanjh the health risks have been lowered , especially by avoiding the sprays on vegetables (agrochemicals and pesticides). This is particularly obvious in south Punjab where exposure to pesticides in cotton areas has led to serious illness such as cancer and other reproductive problems. The doctor who holds the heath camps in Lok Sanjh working areas for the last three years, reported that there is a visible improvement in the heath of women, infants and children, She further explained that all women are doing organic kitchen gardening and,

1. Organic crops contained significantly more vitamin C, iron, magnesium, and phosphates and significantly less nitrates than conventional crops.
2. Protein content may be less but the quality may be better in organic crops than in conventional crops.
3. The doctor says that pesticide breakdown products (metabolites) in preschool aged children and revealed that concentrations of pesticide metabolites were six times less in children eating organic fruits and vegetables compared to levels found in children eating conventional produce.

Organic Agriculture Controls Disease Break Outs

Again the health camps organized by Lok Sanjh reveals that improper waste disposal such as animal matter or human waste is a major source of disease in rural areas. But Organic Agriculture uses these wastes as inputs to the production system through composting, therefore it has lead to a reduction in the prevalence of common diseases like malaria and diarrhoea.

Securing Food, Health and Local Resources

Sakina Bibi says that with the introduction of Kitchen gardening by LSF I feel that,

a. Biodiversity is coming back
b. Food is secured at local level
c. Traditions are coming back with farm fresh produce.
d. Women are replicating this practice every where in the working villages.
e. Women are becoming self-sufficient and earning good amount of money by selling the surplus vegetables.
f. On average there are five to six females/village are engaged in this activity.

The women farmers are saving seeds of these vegetables and they share these seeds with other women in the villages. They have started maintaining community seed banks from where other women can borrow or purchase seeds of vegetables. As they do not use pesticides and fertilizers for vegetables, so the families involved in kitchen gardening acknowledged that the vegetables produced are not only having better taste but also these are healthy as they do not suffer from any health problem related with the use of pesticides.

Razia bibi from Taja Bara says that after working with Lok Sanjh, we started dumping our kitchen and animal waste, that we use as compost. But at the same time it has reduced the frequency of disease break out because mosquito and flies find nothing to multiply and give trouble to village people in the form of seasonal diseases. Now there is reduced level of stomach problems especially among children and women.

It has reduced skin problem as there is no more pesticide use by the farmers that has created a lot of eczema problems in the area.

Organic Agriculture Encourages Economical Use of Natural Resources

The organic agriculture is encouraging communities to make better use of local resources for safe production systems. This has encouraged farmers to add some new productive element to a farm system, like use of natural resources, especially rain water harvesting, reclamation of degraded land, integrated pest management or locally appropriate crop varieties, animal breeds and fish in water harvesting ponds - that boost up both the farm production and income.

Construction of water ponds contributed to achieve positive results in organic kitchen gardening and an environment of competition was observed among female farmers where everyone has been trying to manage her garden more perfectly than other ones. It resulted in **increased production of organic vegetables at household and village level, which further contributed to enhanced food security in the area.**

Farmer Arshad from village Jungle, Northern Punjab says that I am strongly convinced to conserve the rain water and cultivate vegetables on my land. My neighbor farmers also benefitting from this water for kitchen gardening. The system is more beneficial than drip irrigation and my neighbor farmers are eager to change drip irrigation systems in to small water ponds so they can cultivate more vegetable plots. These ponds are also used for fish farming with extra source of income.

Farmer using Rain Water Harvesting (North Punjab)				
	Total	**Women**	**Men**	**Remarks**
No of respondents interviewed	40(200)	20(100)	20(100)	The %ages show that 62.5% of the farmers have build water harvesting ponds and using it successfully to water their crops. These ponds have been built with guidance and technical support from Lok Sanjh, while farmers have their contribution in form of labour and digging the ponds.
Using rain water	25 (62.5%)	10(50%)	15(75%)	
Beneficiaries from 200	125(62.5%)	50(50%)	75(75%)	
Total trained manpower	125	50	75	

Farmer using Rain Water Harvesting (South Punjab)				
	Total	**Women**	**Men**	**Remarks**
No of respondents interviewed	60(300)	30(150)	30(150)	The %ages show that 75% of the farmers have build water harvesting ponds and using it successfully to water their crops. These ponds have been built with guidance and technical support from Lok sanjh, while farmers have their contribution in form of labour and digging the ponds.
Using rain water	45(75%)	18(60%)	27(90%)	
Beneficiaries from 300	225(75)	90(60%)	135(90%)	
Total trained manpower	225	90	135	

Organic Agriculture Promotes Gender Equality

Due to low investment of seeds fertilizers and pesticides at initial stages of a organic production systems, the women are encouraged to fully participate in the farming activities. This has promoted women s access to land, credit, training, extension services, healthy working environment and fair labour practices as an equal opportunities.

Women say that by working on our lands, we are producing more at house hold levels that ensure the livelihood sustainability with better nutrition, food choices, giving women a voice, a dignity and confidence. It is also helping women to come out of the seasonal and low paid jobs.

Building Human Capital

In addition to overall increase in the production system, organic agriculture is also closing the gender gap, which is a proven strategy for improving health, nutrition and education outcomes for rural families.

As a part of the strategy the farmers who are working on organic agriculture, their female partners have been provided goat and poultry to supplement their income. The women say that its easy to feed poultry and goat with organic residue of crops and vegetables that helps reduce the birds' mortality rate. This could empower women by providing them with more earning opportunities, overcome poverty by selling eggs and meat in the local market. While poultry excretions are used as fertilizer for the crops.

Self Reliance and Gender Balance

It has been noticed during survey that many of the women who were given poultry in year 2010 have been able to increase the number of birds up to 100 and they are earning Rs. 3000 to 4000 per month by selling eggs or chickens after fulfilling nutrition needs of their family. The women and their families are fully satisfied with this program and they are extending trainings to other women in poultry management skills. This activity is a sign of change and success in the areas wherever it is implemented.

Manpower trained in Poultry (South Punjab)				
	Total	**Women**	**Men**	**Remarks**
No of respondents interviewed	60 (300)	30(150)	30(150)	The table shows that 300 target has been achieved in training the male and female farmers. These farmers are earning significant income from this activity at the rate of Rupees 3,000 per month in addition to organic crops.
Trained in poultry	60 (100%)	30 (100%)	30(100%)	
Trained from 300	300(100%)	150(100%)	150(100%)	
Total trained manpower	300	150	150	

Manpower trained in Poultry (North Punjab)				
	Total	**Women**	**Men**	**Remarks**
No of respondents interviewed	40(200)	20(100)	20(100)	The table shows that 200 target has been achieved in training the male and female farmers. These farmers are earning significant income from this activity at the rate of Rupees 3,000 per month in addition to organic crops.
Trained in poultry	38 (95%)	20(100%)	18(95%)	
Trained from 200	190(95%)	100(100%)	90(90%)	
Total trained manpower	190	100	90	

Reviving Traditional Economies

Rab Nawaz and Yasmeen Bibi are most thankful to Lok Sanjh for the potential benefit through traditional poultry farming. In less than a year s time chickens' production had increased from an average of 5-10 chickens per farmer to 100 or more chickens. The number of production cycles also increased from only 1 in 12-18 months to 3 in 12 months, enabling farmers to earn more frequently from the business. The couple stated that domestic poultry rearing has increased their income, reduced poverty and improved livelihood for the family. We are relaxed as the crop residue and the organic grains are being fed to the birds, that is comparatively safe for birds health and also there are less chances of disease break out.

The woman says that after completing all the TORs about poultry, i was given 100 birds, that was a moment of great joy for me. In a years time i was announced as a successful poultry farmer and a champion to help mobilize other farmers in the district to start commercial production. Rab Nawaz's earnings from eggs are given as below:

Duration and Egg Sales	Rate of Eggs	Monthly Profit
Nov, Dec, Jan	Rs.10/egg	Rs. 6,000/-
Feb, Mar, Apr	Rs. 7/egg	Rs. 3000/-
May, June,…	Rs. 5/egg	Rs. 4,000/-

Reducing Market Dependency through Women Empowerment

In general, LSF has supported 110 women by providing poultry units. Many of the women who were given poultry in year 2009 have been able to increase the number of birds up to 100 and they are earning Rs. 3000 to 4000 per month by selling eggs or chickens after fulfilling nutrition needs of their family. The women and their families are fully satisfied with this program and they are extending trainings to other women in poultry management skills. This has following impact on the communities,

1 Enhancing food security at local level.
2 Empowering women farmers and their role in the collective decision-making
3 Increasing the poultry production.

LSF has distributed 118 goats to women in 23 villages in the program area. Many women who were given goat in year 2009 have been able to increase the number of goats up to 10 goats and they are earning on average Rs. 5000 to 7000 per month by selling milk and male goats. This is an impact of organic farming as as women are relaxed for their daily food security and are able to take the new initiatives that they used to do before green revolution technologies.

No More Dependency

My name is Murat and belong to village Jaspal in District Attock. Me and my family are enjoying our small seed bank developed with the support of lok Sanjh. This is one of the biggest impact of organic agriculture. Village women are fully involved in this activity, which is more encouraging. I am able to revive and save many of the traditional seed varieties that I feel to be proud of that. It is bringing prosperity, self-sufficiency and enable us to produce our own seeds instead purchasing from the markets. Through this process we are able to produce better seeds than the previous. These seeds are maintained for the common crops (particularly the vegetable seeds), which are sufficient not only for us but also for the farmers from nearby villages. The seeds of the major crops, wheat, rice, fodders are now available in the seed banks.

I am providing seasonal seed to the farmers and farmers return the same seeds with little more quantity after the harvest. So, this helped build the community seed bank and strengthened the seed exchange system of communities.

Family Food Security

My name is Farzana and I live in village Majhia with my husband and two young kids, I am 45 years old and every day work hard to meet my daily needs. Before working with Lok Sanjh we used to grew wheat, maize and Jawar (fodder) but we had to struggle hard to irrigate our fields and rarely able to grow enough produce, to sell and to earn a good living.

Later on I joined the Kitchen Garden program and attended compulsory training/ workshops organized by the LSF staff. After these traings I received an ample knowledge seeds saving, making bio pesticides and increasing production but with low production cost.

Now me and my husband work on our land with more satisfaction. We have completed four agricultural cropping season and the benefits are visible by our living standards and health of the family. Because we are producing enough vegetables to not only feed the family but selling the surplus as well with an income of Rs 5,000/ month. In addition to this we also been able to save some money.

We are thankful that LSF has changed our lives and given us a dignity in the system.

Role of Village Learning Centers

As an impact of organic agriculture, farmers are now being motivated to develop the village learning centers with their most suitable local resources. Through this intervention they achieve the livelihood goals by placing models of all major activities of organic agriculture at VLCs to extend and disseminate knowledge among other village fellow farmers. The VLCs have been successful to demonstrate a welldesigned model of bio diversity based ecological agriculture to test and implement innovative interventions to help sustain the small farmer÷s livelihood as well.

Also these VLCs provide a platform and possible links to market the organic produce by the producer÷s organizations formed at village level. Farmers are trained on possible local mitigation options in the face of changing climate (agro biodiversity, water use, land use and crop rotation through training, demonstration, learning and sharing within farming communities that is organized at VLCs. The women are an integral part of all this process and are trained for production and preservation of local seeds also.

Lowering Production Costs

Lok Sanjh Foundation took initiative to improve food security and income-generating livelihood opportunities through different activities. With this refernce Lok Sanjh Foundation has provided seed storage systems to facilitate small farmers and make them independent of the market systems. Development of seed bank has not only facilitated the small holder but also empowering women and reviving the traditional barter systems in the communities

Seed Bank

I am Rabia from Toba Tek Singh, village 301 RB. I have developed my seed bank with the help and guidance from Lok sanjh. I am convinced that this process has helped me to conserve and revive local seed varieties. Besides these seed banks are low-cost and easily accessible to the local farming families. The seed store becomes a backup to the local market networks where farmers normally exchange seeds and information. These can be crucial in ensuring a sustained supply of locally adapted seeds veriety, thereby averting the potential loss of genetic diversity. Not only these seed banks serve as repositories for seed, but they also function as places where the community members can interact, exchange seeds and share information. Now due to the LSF effortswe are having an ample increase in seed diversity. This as a result is increasing diversity and improved food security as well.

Constraints and Problems

The idea of organic farming was new to some extent for the target communities. Therefore the task of motivating and involving them in the project activities was very challenging and required a vigorous hard work and long term efforts.

However LSF project team successfully responded to these challenges and achieved their objectives in an effective and successful manner.

The major constraint faced during the project to adapt Organic agriculture is the low literacy levels among the majority of the farmers especially the female farmers. This limited the farmer 's participation in training and keeping of records for future reference/ analysis. However, the efforts were made to make the successful with the assistance of Audio visual aids and physical demonstration. Farmers also indicated that initially organic agriculture practices required heavy investments in labour and purchase of appropriate tools (e.g. spades, wheel barrows and forked hoes). With time, as the farm stabilizes the labour burden on the farmer's reduces.

The gender sensitization also took a little longer time due to the male dominated patriarchal society. The adoption rate for interventions varieD from farmer to farmer but is strongly correlated with the degree of gender harmony in the family.

The project operated at community level required a lot of investment in community sensitization and awareness raising on environmental issues. The budgeted time was short,

- To organize communities
- To mobilize communities
- To create awareness on the subject issues
- To train communities
- To disseminate information to the masses
- To get the desired results and outcomes of the project

In the process, those in the community that are slow to respond, for one reason or another, were left out.

Then promotion of organic agriculture at community level requires a lot of time in training and extension for communities that have been demoralized by past experiences.

Great efforts were needed to build trust not only in the project but also in the approach to agriculture.

The project activities provided a unique opportunity for a number of stakeholders, to get involved and contribute in the success of the project. The major stakeholders÷ were ma and females farmers, students, teachers, educationists, local activists, political workers, members of local bodies, government officials, media persons, civil society organizations universities and agri-business communities.

Lessons Learnt

The trainings were participatory and practical based on farmers' indigenous knowledge where farmers also made contributions about their present practices.

The exchange visits and sharing of experiences enabled farmers to learn what their fellow farmers were doing and draw inspiration.

Recommendations

Situation is improving in Lok Sanjh working areas. A number of farmers have already converted their lands from conventional to Biodiversity based Ecological Agriculture, the only way to avail sustainability in agriculture, ensure food security, eradicate poverty and hunger.

Many farmers are in conversion period and decreasing their dependency on external inputs gradually.

- The scale up of the existing program/project is highly recommended that needs at least 3-5 years. Therefore the current project should be continued as it has all potential to bring about the attitudinal change among the male and female farmers, required to promote organic farming practices in all parts of Punjab and Kashmir regions.

- Strong linkages of the skilled male and female farmers, interested in agro-based micro enterprises need to be established with the micro credit financial institutions.

- Documentation, publication and dissemination of the project achievements and success stories may be helpful for promotion of organic farming practices, so need to be replicated in other parts of the country.

- Production technologies which can work in association with the techniques of Ecological Agriculture such as System of Rice Intensification (SRI), should be identified, tested and replicated.

- More crop rotation is needed for use of biological control and other techniques to manage weeds, insects and diseases.

- In north Punjab rotational grazing and mixed forage pastures for livestock operations and alternative health care for animal wellbeing need to be

encouraged among farming communities.

- Need more models of organic agriculture at village level.
- In North Punjab it need more focused work with women farmers to enhance their role and effectiveness in creating better livelihoods at the village level.
- Lok Sanjh needs to persue some policy dialouge to upgrade its efforts to support organic farming in the country.
- Marketing support needs more innovative attention to accommodate ever increasing supply of organic crops.
- The organic crop production need to developed in an integrated farming systems as in Nothern Punjab, livestock offers a better opportunity for sustainable livelihood.

Annexes

Annex 1. List of Project Villages Selected for Study

North Punjab (District & Tehsil Fateh Jang)

S. No	Name of Villages
1	Chappirian
2	Choi 1
3	Gaji
4	Hustal
5	Dhoke Namdar
6	Jangal
7	Malik Pur
8	Murat
9	Qutbal
10	Soak

South Punjab

S. No.	Districts and Areas	Names of Villages
1.	Toba Tek Singh Area	1. Chak No 297
		2. Chak No 298
		3. Chak No 299
		4. Chak No 301
		5. Chak No 301 New gb
		6. Chak No 302
		7. Chak No 303
2.	District Khanwal Area	8. Chak No 6/d
		9. . Chak No 8/d
		10. Chak No 17/d
		11. Chak No 5/d
3.	District Jhang Area	12. Chak No 18 kag
		13. Chak No 17 kag
4.	Kamlia Area	14. Chak No 701/43
		15. Chak No 700/44

Annexes

Annex 2: Data and main features of the activities carried out

Project: Development for Justice (June 2008 - May 2010)

Village Food Security Program (VFSP): Statistical Summary

Sr. No	Activities	1st Year	2nd Year	3rd Year	Total
1	Green Houses	08	03	05	15
2	Seed Banks	07	07	08	21
3	Plant Nurseries	13	10	15	38
4	Farmer Research Farms	10	04	02	16
5	Farmer Field Schools	18	15	10	43
6	Farmers Conference	01	02 (Dehqan Assemblies)	02 (Dehqan Assemblies)	04
7	Marketing Support	--	01	For rice	01

Strengthening Local Democracies: Statistical Summary

Sr. No.	Activities	1st Year	2nd Year	3rd Year	Total
1	Meeting with Local Govt.	02	11	15	20
2	VIEA	28	06	06	35
3	VDP	14	12	11	30
4	Village Eco	11	09	08	21
5	YES	--	--	01	01

6	School Eco	08	10	10	26
7	School debates	03	02	06	09
8	Games	01	01	01	03

4.3. Women in Agriculture and Development Alternatives: Statistical Summary

Sr. No	Activities	1st Year	2nd Year	3rd Year	Total
1	Seed bank		21	15	36
2	Grain Bank	04	17	3	21
3	Goat distribution	15	34	60	49
4	Drip irrigation / Water harvesting	08	06	01	15
5	Kitchen Gardening	16	142	45	203
6	Poultry	09	25	625	659
7	Farmer Research	14	19	20	42
8	Health Camp	01	01	02	03
9	Exposure visits		01	-	01
10	Site selection	16	19	2	35
11	Organization formation		19	2	19
12	Women conference	01	01	01	03
13	Awareness campaign		12	03	13
14	Cooking festival	02	01	01	03
15	Adopt A school	03	13		16
16	Biodiversity Farms			20	19

Project: Food Security in the Changing Climate (June 2011 – May 2012)

Programme Activities

North Punjab

Sr #	Details	Year 1 (June 2011-May 2012)
A	**Village Learning Centers**	
a	Water Harvesting	03
b	Seed Banks	03
c	Kitchen Gardening	06
d	Farmer Research Farms	02
e	Organic Poultry Production	150 poultry birds
f	Local Goats Breeding	30 goats
B	**Advocacy and Awareness**	
a	Dehqan Assemblies	01
b	Harvest Celebration/Farmers	01
C	**Rural Enterprise Development**	
a	Farmer Business Schools	04
b	Sunday Markets	08
D	**Trainings**	
a	Trainings of staff and farmers	06

South Punjab

Sr #	Details	(June 2011-May 2012)
A	**Low Carbon Ecological Agriculture**	
a	**Low Carbon Technologies**	02 Trainings
b	**Water Harvesting**	03
c	**Seed Banks**	03
d	**Green Houses**	03
e	**Kitchen Gardening**	06
B	**Capacity Building**	
a	**Farmer Field Schools**	03
b	**Farmer Research Farms**	03

C	**Advocacy and Awareness**	
a	**Dehqan Assemblies**	01
b	**Campaigns**	02
c	**Harvest Celebration/Farmers**	-
d	**Village of Hope Festivals**	01
e	**Networking with Partners**	02
f	**Research Studies**	02
D	**Women Economic Empowerment**	
a	**Technology Development for**	04
b	**Organic Poultry Production**	100 Poultry Birds
c	**Local Goats Breeding**	15 Goats
E	**Rural Enterprise Development**	
a	**Value Chains**	02 trainings
b	**Farmer Business Schools**	04
c	**Sunday Markets**	10
F	**Trainings**	
a	**Trainings of staff and farmers**	4

Annexes

Annex 3: Progress Against Outcomes, Risks and Mitigation Measures

<table>
<tr><th>Outcomes that contributed to policy and practice change</th><th>Milestones of progress towards the outcome</th></tr>
<tr><td>Ecological agriculture maintained and strengthened in 121 villages and initiated in 99 new villages - A total of 205 villages in Punjab</td><td>
Area Villages
1- Central Punjab 89
2- Southern Punjab 78
3- Rawalpindi 38
Total 205

The area wise detail of beneficiaries both male and female is following;

<table>
<tr><th>Areas</th><th>Male</th><th>Female</th><th>Total</th></tr>
<tr><td>Central Punjab</td><td>5306</td><td>1278</td><td>6584</td></tr>
<tr><td>Southern Punjab</td><td>2836</td><td>962</td><td>3798</td></tr>
<tr><td>Northern Punjab</td><td>483</td><td>1091</td><td>1574</td></tr>
<tr><td>Total</td><td>8625</td><td>3331</td><td>11956</td></tr>
</table>

Following is the area wise data of organic farmers who completely changed their lands already while others are in the conversion period.

Central Punjab 1165
Southern Punjab 711
Northern Punjab 550

Normally it takes 4-7 years to convert the land from chemical input intensive conventional agriculture to Biodiversity Based Ecological agriculture depending upon the condition of the soil.

Secondly, its highly difficult to convert the lands to organic in southern Punjab due to high usage of chemical inputs in the form of pesticides and fertilizers on cotton (Main crop of the area) and diffusion of Genetically Modified cotton (BT Cotton) in the area.
</td></tr>
</table>

Communities (men, women and youth) in Punjab are aware and are able to make their own decisions about livelihood decisions including environmental and nutritional awareness	• Almost all programmes contributed successfully to achieve set targets and desired results to motivate the different stakeholders like farmers, women farmers, landless workers, tenants, local leaders, youth, scientists, teachers and students for sustainable use of natural resources for better livelihood opportunities. • The Village Food Security Programme remained successful in promoting the Biodiversity Based Ecological Agriculture (BEA) to support the farmers to get higher yield with limited cost of production. Integrated Farming Systems ensured the crop diversity in the fields and offered more food choices to the farmers. • In the absence of local Government system, Lok Sanjh identified local leaders and potential candidates for the future local Government Elections and organized activities like VDP and Local Government meetings to build their capacity for environment and farmer friendly policies. • Based on the health surveys, health camps were also organized to support the communities especially the women and children. The data about the fatal diseases is shared with local leaders, District Health Department and concerned Health Units. All above mentioned points helped communities to identify their own priorities and finally make their own decisions about livelihood.

Women and men farmers (205 villages) are empowered and are playing a more effective role in regenerating rural economies and fighting poverty	• Farmers were involved in research and trained about different ecological crop production technologies in farmer field schools. More than hundred lead farmers have been identified to work as farmer trainers to train other farmers. • Models of Ecological Agriculture were developed in different ecological zones to display the ecological technologies. These models are called Village Learning Centers (VLCs). These centers will be regular sources of learning for the farmers. • The climate responsive technologies like System of Rice Intensification were introduced to support the farmers in changing climate. The trials of SRI were conducted at different places to showcase the benefits of the technology. Lok Sanjh organized regular visits of the farmers so that they might observe the process. With SRI, the farmers averagely got higher production with more efficient use of irrigation water reducing the cost of production considerably. • Women were especially focused by involving them in income generation activities like kitchen gardening, poultry and goat farming. Lok Sanjh also encouraged them to take their traditional role in seed saving.

An enabling environment is created at local, national and regional level where farmers can influence policy making process in agricultural sector	• A Rural Women Conference was organized on "Rice Diversity, Technology and Food Security" to recognize the women's role to ensure diversity and food security. More than 2000 women farmers from different areas of District Sheikhupura, Gujran walla, Nankana Sahib, Toba Tek Singh and Jhang. The Conference remained helpful in sharing the strategies regarding the food Sovereignty, women empowerment and achieving self-sufficiency from available resources. • Memorandum of Understanding with University of Agriculture Faisalabad (mother institution in Agricultural research and education in Pakistan) remained quite helpful for promotion of Ecological Agriculture and lobbying scientists against introduction of Genetically Modified crops like BT Cotton and resisting the Multinational Corporation which are interested to launch BT and Roundup Ready Corns. • Lok Sanjh is the focal organization of International networks like South Asian Network on Food, Ecology and Culture (SANFEC), Food Sovereignty thematic Group of South Asian Alliance on Poverty Eradication (SAAPE) and "Save our Rice Campaign' of PANAP to link the farmer's struggle for farmer friendly policies at international level. Lok Sanjh is the member of Steering Committee of Sustainable Agriculture Action Group (SAAG) in Pakistan which is striving for small farmer oriented policies at National level and resist profit oriented Multinational Corporations which intend to grab the seed sectors of developing countries like Pakistan with support of IPR (Intellectual Property Rights) regime.

Milestone for Risk Reduction

Principal Risks to the Success of the Outcomes	Milestone of risk reduction or control
1. Global food crisis will create chaotic situations and can either positive or negative effects 2. Fertilizer/pesticides companies can endanger LSF staff	• Farmers are assembled in the forms of committees for different programmes. These committees take the responsibility along with Lok Sanjh to organize activities and with their regular feedback contribute to the success of the events. These committees remained very helpful in ensuring the participation and strengthening the process to achieve the desired results. • Lead farmers have been selected from these committees to further train the farmers. These lead farmers will be further trained to develop value chains by involving different producer's organizations. • Strong relationships with local leadership also contributed for involvement of different stakeholders in decision making process for the sustainable use of natural resources.
3. new national government may abandon local government systems 4. political chaos can affect the strategy to mobilize people	• In the absence of Local Government System, Lok Sanjh involved Local leaders and members of Provincial Assembly of the Punjab and members of National Assembly of newly elected Government in the discussions and shared the plans developed in VDPs and Local Government Meetings so that local level decisions may be shared at the Provincial and National level for policy and practice change. • Pakistan Dehqan Assembly in consultation with members raised the issues of introduction of GMOs and unavailability of irrigation water. The issues were raised in the Dehqan Assemblies and discussed in detail to finalize the recommendations that were later sent to all Agricultural Institutions and concerned Ministries. The issues were also discussed in National Assembly. Farmers also organized rallies and forums to register their protest against all these developments. • Dehqan Assemblies also remained helpful in building the capacity of the farmers on the issue of Genetic Engineering and introduction of GE crops in Pakistan as Government of the Punjab has already given approval to nine BT varieties by different firms in 2010, Intellectual Property Rights and issues of Farmer's Rights in recent Punjab Seed Act 2011. • The recommendations for change in National and Provincial policies developed in Dehqan Assemblies by the farmers were also shared in bigger gatherings like Farmer's Conference to raise awareness at wider level.

5. energy crisis will effect the rural economies 6. climate change	• Village Learning Centers (VLCs) are developed to train the farmers on different technologies of Ecological Agriculture. Most of Farmers Field Schools were organized at VLCs so that farmers may learn from display of technologies and assess their benefits. This strategy remained successful in spreading the techniques of ecological agriculture. • Lok Sanjh conducted a study on potential climate change hazards and their impacts on agriculture. The study was based on direct interviews, focus group discussions and general assessments of the farmers. The study showed that frequent changes in temperatures, erratic rains, expansion in summer season and strong winds are adversely affecting the yield and contributing to increase the cost of production of the farmers. In the light of this study, Lok Sanjh involved farmers in research on different proposed climate responsive technologies. 1- SRI and SCI as Climate responsive technologies 2- Techniques of Ecological Agriculture 3- Inbuilt Adaptation — Research on different indigenous varieties to identify the drought, flood and temperature resistant varieties. • The results of this research remained fruitful as farmers identified that by SRI and techniques of ecological agriculture, they could manage climate change impacts. They also identified some varieties that were resistant to drought and frequent temperature change. • WADA Programme significantly built the capacity of the women farmers and involved them in income generating activities that really supported to increase the household income and empower the women at household level. Women together developed the Network of Women (NOW) to share their experiences and discuss the common concerns to raise their voices for their rights.
7. Resistance to change within agricultural institutions	• Dehqan Assemblies and Farmer's Conferences remained quite effective in creating suitable environment to get feedback from farmers and raise their voices at local, provincial and national level. • Collaboration with University of Agriculture provided a platform for advanced research on different techniques of ecological agriculture and SRI as water efficient technique. It also provided a space for lobbying the scientist to create a feasible environment for policy and practice change for small farmers.

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