SUCCESSFUL STORIES

FROM THE PEASANT FAMILY FARMING (PFF)

curated by

PEOPLES' FOOD SOVEREIGNTY

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Executive Summary

The General Assembly of the United Nations, at its 66th session, declared 2014 as the "International Year of Family Farming" (IYFF) and invited FAO to facilitate its implementation in cooperation with governments, the United Nations system and relevant non-governmental organizations.

The International Planning Committee for Food Sovereignty (IPC) isan autonomous, self-organised global platform of social movements and small scale food producers organizations worldwide that represents hundreds of organizations and more than 300 millions small-scale food producers. IPC is participating in the IYFF in line with its history and legitimacy and proposesa forename to its events: "Peasant Family Farming".

"We do not intend to take definitional characters that circumscribe and delimit peasant agriculture within categories, as this collects the events of a composite world, rich in geographical organizations differentiated from the social, cultural and productive point of view" (AAVV – Crocevia, 1994)

The main objective of the publication is to document examples of sustainable and successful peasant family farming (PFF) food profuction practices all over the planet. The case studies of successful stories are document from the different regions , identifying best practices of family and agro-ecological models in agriculture at grass-roots level, with a special focus on positive outcomes in promoting socially fair and ecologically sound agricultural development. The case studies pay special attention to aspects relating to (i) **sustainable management** of environmental resources, (ii) farmers **seed systems** management at the farm level in order to better understand constraints and possibilities of using locally adapted varieties and (iii) valorization of agricultural biodiversity, with the aim of capitalizing different experiences of small-scale agricultural production within a participatory and negotiated approach to territorial development.(iv) harvesting strategies of small scale fishing family.

Summarizing the Case-Studies

La Agricultura Familiar Campesina en Argentina

La dimensión de la Agricultura Familiar Campesina (AFC) en Argentina destaca por su alta participación en la provisión de empleo sectorial (un 53%) así como la alta productividad relativa a las grandes explotaciones y derivada de la poca superficie de tierra productiva controlada.

En relación al tipo de actividad productiva desarrollada por la agricultura familiar campesina (AFC), se observa una escasa participación de actividades relacionadas con la agroindustria y la artesanía. En este sentido los estudios de caso seleccionados por nuestro trabajo, agroindustria y caprino, tienen un alto potencial de crecimiento y pueden servir como experiencias piloto para su multiplicación.

Estas dos experiencias de AFC dan cuenta de las potencialidades del sector para la producción no sólo de alimentos sino de otros productos necesarios para la vida: los encadenamientos agroindustriales (caso 1) y el encadenamiento caprino (caso 2).

EU: Peasant Family Farming, a challenge to gain[1]

The success of peasant agriculture is characterized by diversified productionand sources of income in order to mitigatethe economic risks congenital to agriculture: The difficulties emerge rapidly, and are for the most part social and cultural.

In the EU, it is complex to restart agricultural activity, not only because of economic difficulties, but more often for the social difficulties that must be overcome in order to fit back into a structured social reality that – at the same time – is dissolving due to the lack of cohesion and solidarity. All of this is very far from the clichés of a cohesive and supportive rural environment. Building a farm requires investment, money that a peasant family doesn't have. Extra-sector jobs need to provide such financial resources that have to be invested in the farm. Difficult access to land and the need to have a minimum financial availability are often problems.

Peasant Agriculture, Seed Autonomy and Peasant Management of Crop Biodiversity in Senegal.[2]

In Senegal, almost all Senegalese farmers practise peasant and family farming. It feeds up to 60% of the urban and rural population, in a country where the rural world still represents over 55% of the population.

The adoption and dissemination of agroecological techniques is part of a larger initiative undertaken in the context of peasant associations and collectives. Farmers Associations are seeking to set up agrifood processing and commercialisation units, i.e. individual micro-companies or units managed by groups, including product packaging

In order to underscore the inextricable link between agroecology and agrobiodiversity, the need for concerted action between the different actors has become increasingly evident, especially among those peasants that wish to increase their control over the management of appropriate seed supply.

1 This chapter is produced by Associazione Rurale Italiana (ARI)

2 Contribution de l'Association Sénégalaise des Producteurs de Semences Paysannes (ASPSP)

Peasant seed fairs allowed them to: 1) offer opportunities to exchange knowledge, experiences and old seed varieties as well as new varieties sown by peasants; 2) to identify areas and communities that are rich in biodiversity and identify and locate their guardians and understand their motivation for preserving this wide diversity; iv) strengthen links between participating organisations and build networks.

Finding old varieties, multiplying them and circulating them in order to ensure their survival and their use in different regions often depends on luck, and on long and patient work

Senegal, like the rest of the West African region, is the main centre of diversity of African rice, millet, yams, sorghum, cowpea and fonio. For generations, peasant farmers have contributed to the development of crop biodiversity, by regaining control over its management, upkeep and renewal based on their production systems and on their farms.

Women Family Farming, fight against the climate change.[3] Sunderbans, West Bengal, India

In India, more than 65 % of the population lives of agriculture, and 90% of this are small farmers owning less than 2 acres.

The peasantry is dominated by large prevalence of small land holdings coupled with a large section of landless and marginal farmers. Agriculture is becoming more and more unprofitable due to liberalized economy. The food and nutrition security of the farmers are exclusively at stake.

Patharpratima block of South 24 Pgs[4] is located in the southern part of Sunderbans, where agriculture is being practiced at nature's mercy. This area is very much vulnerable to climate change and prone to extreme weather events i.e. tidal floods, cyclonic storms, more variable precipitation and soil salinity that made the farming untenable, where around 90% of households depend on agriculture directly or indirectly.

3 By: Raj Krishna Mukherjee - Development Research Communication and Services Centre and S.KANNAIYAN. - South Indian Coordination Committee of Farmers' Movements (SICCFM)

4 Patharpratima (community development block) is an administrative division in Kakdwip subdivision of South 24 Parganas district in the Indian state of West Bengal

Rita Kamila, a 32-year-old farmer of Ramganga village of Patharpratima Block in Sunderban region, was determined enough to overcome nature's unending challenge and achieved a sustainable source of livelihood in one of the world's top climate hotspots. She opted for an integrated farming system, organic farming, vermi-composting and biogas. Rita has worked almost single-handedly for five years on her 165 decimals of farm to ensure the right mix of cultivation, poultry, fishery, and cattle.

Artisanal Family Fisheries: a case of in Gujarat[5].

Located in the west coast of India, Gulf of Kutch is an inlet of the Arabian Sea which is majorly spread across three districts, namely Kutch, Jamnagar and Rajkot and touches Surendranagar district.

In the study area fisher folks migrate to the coastal area for eight to nine month in a year where there is no basic infrastructure. They fight with the vagaries of nature to earn their livelihood.. The community has good knowledge of marine ecology and coastal ecosystems.

Traditional fishing practice results in low output, which directly affects their low income and substandard living. Outside market knowledge and information regarding the correct price is minimal, mostly dependent on middlemen for selling their produce. All the occupation

related decisions are taken by elders, and youths don't get opportunity to take new initiative. They have limited risk taking ability.

The fishing communities have come together to ask for their rights and are united on many coastal issues important for coastal area along with their right to sell their produce at fair prices.

The coastal environment and areas have always been important for the fishing community and is so especially in today's times when the fish production is decreasing day by day, due to several factors, mostly man-made

5 By: International Collective in Support of Fishworkers (ICSF) an international non-governmental organization that works towards the establishment of equitable, gender-just,self-reliant and sustainable fisheries, particularly in the small-scale, artisanal sector.

In the name of development, a lot of unorganised industries have emerged on the coasts leading to pollution and destruction of coastal flora and fauna. To check this, industrialization needs to be made more organised and compatible with traditional livelihoods (like fishing) of the communities residing in these areas.

INTRODUCTION

Peasant Family Farming and its distinctiveness

"... I often feel small and powerless, but I do not feel alone".
[Maria Paola Ceretti, 2013]

Family Farming (which includes all family-based agricultural activities) is a means of organizing agricultural, forestry, fisheries, pastoral and aquaculture production which is managed and operated by a family and predominantly reliant on family labour, including both women's and men's. The family and the farm are linked, co-evolve and combine economic, environmental, social and cultural functions.

Family Farming is one of the most predominant forms of agriculture worldwide, in both developing and developed countries. Diversity of national and regional contexts, in terms of agro-ecological conditions, territorial characteristics, infrastructure availability (access to markets, roads, etc.), policy environment, and demographic, economic, social and cultural conditions, influences FF structures and functions, as well as livelihood strategies.

The sector comprises a wide spectrum of farm sizes and types. At one end of the spectrum are very large landholdings of several hundred hectares in high-income economies where farms can be easily cultivated by one or two family members with the use of labour-saving machinery and hired labour. At the other end of the spectrum, in low-income economies, FF usually consists of smallholdings of a few hectares or less, often oriented towards subsistence with low marketable surplus.

Peasants' farming systems[6] play a decisive role in feeding the world population, at national and international levels. At the same time, 80 percent of people suffering from hunger are living in the rural areas, and 60% are small scale food producers. They are victims of systematic discrimination and human rights violations. As we say, about 80 percent of the world population suffering from hunger lives in rural areas: about 60 percent live in rural small-holder farming households while another 22 percent are farming households that do not have access to land. Eight percent are herders, fishers and forest-dwellers. Overall, 60 percent of those suffering from chronic hunger are women, and rural women are particularly affected.

In its study, the Advisory Committee to the Human Rights Council identifies five main causes of the discrimination and vulnerability of peasants: expropriation of their lands, displacement and forced evictions; gender discrimination; absence of agrarian reform and policies for rural development; lack of minimum wages and social protection measures, especially in the context of privatization of land and water resources; and the repression and criminalization of movements defending the rights of people living in rural areas.

Access to productive resources is crucial for peasants, and for all strategies that aim at effectively combating hunger and poverty in the world. However, the often precarious access to land and other resources is currently threatened by a dramatic new wave of large scale land acquisition. While precise details are hard to come by, it is estimated that at least 70 million hectares of good agricultural land have been transferred from peasant farmers to corporations in the last few years alone, and every day more investors join the rush.

Peasants around the world also face increasing constraints from

6 *Peasants* are women and men, including the landless, who have a direct relationship with land and nature through the production of food and agricultural products by working them self the land. Peasants have been cultivating biodiversity for 12,000 years, selecting seeds, animals, systems of productions and adapting to specific farming conditions. Through thousands of years of continuous management and innovation by peasants, the few initial crops and domesticated animals evolved into an unconceivable wealth of agriculture diversity, in farming systems, in cultivated species and varieties, in domesticated animals and in genetic diversity . Just on crops species, an estimated 7000 species of crops have been cultivated or collected by humans for food, and the estimated number of distinct varieties of each of these crops exceeds 100,000.

natural resource degradation and climate change. The ecological impacts of industrial agriculture are disastrous and range from high vulnerability to the effects of climate change and plagues; destruction of biodiversity; salinization and loss of fertility of soils; excessive use of water and contamination of water resources.

According to the FAO's last report on the State of the World's Land and Water Resources for Food and Agriculture, 25 percent of the world's soils are degraded. Furthermore, industrial agriculture is responsible for 13.5 percent of CO2 emissions. As mentioned before, peasant family farming represents a sustainable **alternative to stabilize, diversify and also increase food production.**

The International Planning Committee would like to contribute to the International Year of Family Farming, introducing the "*Peasant*" [7]wording to the celebration in order to recall the role of millions of unknown peasants, who have been cultivating the land and conserving the world's agricultural biodiversity for the last 12. 000 years.

The celebration of the *International Year of Family Farming* is also the opportunity to publish a study documenting successful experiences from different regions of the world that demonstrate the effectiveness of different types of peasant family farming, with particular focus on its positive, sustainable and its viability as an alternative to tackle food insecurity and poverty in rural areas.

The main objective of the publication is to document examples of sustainable and successful peasant family farming (PFF) agricultural practices all over the planet. Although the names of PFF we use may vary considerably from one place to another, the IPC wants to share the experiences and the common key principles of truly sustainable peasant agriculture, involving a combination of recovery and revalorization of traditional peasant family farming methods and the introduction of innovative ecological practices.

The case studies of successful stories will be documented in the different regions, identifying best practices of family and agro-ecological models in agriculture at grass-roots level, with a special focus on positive outcomes in promoting socially fair and ecologically sound agricultural development. The action researches will pay special attention to aspects relating to (i) **sustainable management** of environmental resources, (ii) farmers **seed systems** management at the farm level in order to better understand

7 Chayanov, A. V., 1925, The Theory of Peasant Economy.; Jan Douwe van der Ploeg - http://nextgenafrican-farmers.com/2014/01/26/10-qualities-of-family-farming/

constraints and possibilities of using locally adapted varieties and (iii) valorisation of agricultural biodiversity, with the aim of capitalizing different experiences of small-scale agricultural production within a participatory and negotiated approach to territorial development.(iv) harvesting strategies of small scale fishing family

The case studies provide outcomes at different levels: (i) description of local and national contexts focusing on aspects that are most relevant to this study; (ii) involvement and motivation of local stakeholders; (iii) needs/resources assessment; (iv) collection of existing background information in terms of knowledge, networks and already existing perceptions of family and agro-ecological models in agriculture, (v) personal stories and narrative[8]

The study follows **four specific objectives, in accordance with the official agenda of the IYFF, to disseminate the positive result of Peasant Family Farming around the world**:

a) **contribution** to the development of public policies supporting peasant agriculture (construction of and access to markets, model of production, food systems, peasants' seed systems etc.)

b) **recovery** of indigenous and traditional knowledge, experience-based knowledge and best practices for exchange and public awareness-raising;

c) generation of better **understanding** of peasant family farming needs, potential and constraints;

d) **creation of synergies** between different small scale food producers for the creation of "sustainable" food systems

As basic references for such work, we will use:

Peasant Farming. Definitions and Contradictions

"We do not intend to take definitional characters that circumscribe and delimit peasant agriculture within categories, as this collects the events of a composite world, rich in geographical organizations differentiated from the social, cultural and productive point of view" *(AAVV – Crocevia, 1994)*

"...Family farming is also difficult to grasp because it is a complex, multi-layered and multi-dimensional phenomenon... **The farming family is**

8 The Peculiarities of Oral History - Alessandro Portelli - hwj.oxfordjournals.org/content/12/1/96.full.pdf

part of a flow that links past, present and future … This means that every farm has a history and is full of memories……" - "Ten qualities of family farming" (- Jan Douwe van der Ploeg, 2013 –)

"... In the factory, the importance of the collective of workers allows a division of labor thrust, which is itself behind the leap in productivity. In the family farm, this collective is reduced essentially to one or two individuals (the farm couple), sometimes assisted by one, two or three partners or permanent workers, but also in some cases of more seasonal (especially for harvesting fruits and vegetables). No division of labor is generally fixed permanently practiced and tasks are versatile and variable. In this sense this family farming is not capitalist (S.Amin)

To identify the regions, country and types of PFF we have consulted the IPC constituencies.We selected contributions based on geographical representation, types of PFF, type of agriculture and food system, and gender. We have asked original contribution through direct interviews and have used data produced by public institutions.

The outcomes of the study is published by FAO and presented during the official IYFF activities.

Peasant Family Farming in Argentina[9]

1. Intrduction

Peasant Family Farming (PFF) comprises a large group of individuals, relationships, organisations and institutions. In the face of today's predominant productive model, which is causing major environmental, food-related, economic and social problems, PFF is a feasible alternative if developed within a different socio-political framework and productive model.

This alternative model comes in the form of Agroecology, a combination

9 Latin American Chapter on the publication Successful Experiences of Peasant Family Farming in the framework of the FAO Declaration on 2014 as the International Year of Family Farming (IYFF). Drafted by Facundo Martín in collaboration with Natalia Manini, Raimundo Laugero and Rodolfo Greco, members of the National Indigenous Peasant Movement, CLOC and Via Campesina.

of know-how and practices that underpin production, labour and the relationship with nature while avoiding overexploitation. Agroecology goes hand in hand with the struggle for Food Sovereignty, the defence and recovery of our territories, agrarian reform and the unity of our peoples and organisations from both rural and urban areas.

The present work is organised in three large blocks, which give an overview of the present situation and possibilities of PFF: 1) Context and conceptualisation of the PFF in Latin America and Argentina: 2) Study cases on Production Chains in Agribusiness and Goat Products and 3) Conclusions and Recommendations for policies.

1.1. Regional and national contexts of Peasant Family Farming

The PFF dimension in the region's different countries is highly varied. This is partly due to the enormous differences between countries. High employment in this sector stands out (between 53% in Argentina and 77% in Brazil). The high productivity compared to large farms is also worth highlighting, given the fact that the peasants control a limited amount of productive land (between 6% in Uruguay, and 57% in Colombia)

At regional level, land concentration and subdivision in different countries also differs. Some countries have witnessed fragmentation of their productive units, such as Mexico, where an increase of 7,8% in production units took place between 1991 and 2007, going from 3,8 to 4,1 million registered farms (INEGI, 2007). A 2012 census identified "*5,4 million rural economic units and 3 million of these are poor.*"[10] In contrast, in Argentina, Brazil, Chile and Uruguay, a tendency towards land concentration can be observed. In Argentina, the amount of farms dropped by 20,8% between 1998 and 2002 (INDEC 2009)[11]. Similarly, according to a study on land grabbing commissioned by the FAO, Argentina and Brazil presented significant cases in this respect.[12]

Table 1. Family farming contributions in some countries of the region

10 http://www.sagarpa.gob.mx/programas2/evaluacionesExternas/Lists/Otros%20Estudios/Attachments/42/Agricultura%20Familiar_Final.pdf

11 "The data currently available from completed census are taken from CNA 1988 and 2002. There are partial results from the 2008 census, of relative value in terms of census, mainly because of how long it takes to develop, thus affecting the data's representative and comparable quality." Http://www.rlc.fao.org/fileadmin/content/events/semtierras/acaparamiento.pdf

12 http://www.tni.org/sites/www.tni.org/files/download/borras_franco_kay__spoor_lac_land_grabs_spanish_nov_2011.pdf

	Argentina	Brazil	Chile	Colombia	Ecuador	Paraguay	Uruguay
	(d)	(c)	(b)		(c)	(a)	(a)
IMPORTANCE OF SECTOR							
FF share in the sector's production value (%)	19,2	38	22	41	45		
FF share in employment in the sector (%)	53	77	61	57			
FARMS	(a)	(a)					
Amount of Family Farms (in thousands)	251,1	4367,9	254,9	737,9	739,9	264,8	32,6
FF share in the total amount of farms (%)	75,3	84,4	95	87	88	91,4	57,2
SURFACE	(a)	(a)					
Average surface of FF (ha)	142	18,4	17	3	7	7,4	77,2
Total average surface (ha)	593	64	38	4,6	14,7	107	287
FF share in surface total (%)	20,3	24,3	44	57	41	6,3	15,4

Source: Namdar-Irani, M. 2013, from:

(a) Agricultural census in Argentina (2002), Brazil (2006), Paraguay (2008) and Uruguay (2000), quoted in REAF (Specialised Meeting on Family Farming) 2010,p. 12.

(b) "Qualitas Agroconsultores" 2009.

(c) FAO-BID. 2007.

(d) Obschatko *et. al.* 2007.

(e) Surveys of homes in Guatemala (2006), El Salvador (2006), Honduras (2006), Nicaragua (2005), Costa Rica

(2007) and Panama (2003).

(f) Agricultural Census in Guatemala (2004), El Salvador (2007), Honduras (1993), Nicaragua (2001) and Panama (2000).

Following the census figures (INDEC, CAN 2002) and in accordance with the adopted and used definition of Family Farmer,[13] 251,116 family farms were registered across the country, making up 75,5% of all farms registered in the same census. Family farms covered 30,9 million hectares, which accounts for 17,7% of the total farmed area. Despite these unequal conditions, family farmers produced 19,2% of the GDP value in this sector,[14] thus achieving a 53% more in productivity

13 The adopted definition is the "IICA-PROINDER" 2009 study: "Family farming" is defined by the producer's direct participation and family work on the farm, while accepting that up to two non-family members may be employed and remunerated. Additionally, there are restrictions to the maximum surface that can be worked on, with the best technological conditions, directly by the producer, his/her family and employed workers, and a maximum surface that can be cultivated in the same conditions. ***A Family:*** "Small-scale producer". Does not own a tractor, has fewer than 50 Livestock Units and less than 2 hectares, is low risk, has not fruit trees or covered crops. ***B Family:*** "Small-scale semi-capitalised Producer". Tractors are over 15 years old. Owns between 51 and 100 Livestock Units, has between two and five irrigated hectares or up to half a hectare with fruit trees. ***C Family:*** "Small-scale capitalised producer". Tractors are less than 15 years old. Or owns over 100 Livestock Units, or over 5 irrigated hectares or over half a hectare with fruit trees and/or greenhouses. ***D Family***: family producer, who employs and remunerates one or two non-family members.

14 Information from the study "Small-scale Producers in Argentina" (2008, IICA-PROINDER/ SAGPyA).

per hectare than medium and large farms. In conclusion, policies that improve the redistribution of and access to land and territory would have very significant effects. According to the same source, 87% of the production's value on family farms stems from oilseed, cattle rearing, grain, vegetable crops, fruit trees (where fruit is left to mature on the land, not in ripening chambers), vegetables and fodder crops. FF is particularly present in agricultural activities such as tobacco, cotton, mate tea and sugar cane, representing between 90 and 94% of livestock and crop farms that declare those crops.

In percentage rates, family farms are predominant in the country's Northern and Northeastern regions (78% and 92% of the respective total of livestock and crop farms in these regions) and they represent a percentage rate of 60% and 69% in the Cuyo, Pampean and Patagonia regions.

Moreover, according to the National Registry of Family Farming (ReNAF)[15] 65,487 Family Farming Centres (NAF in Spanish) had been registered by August 2012. This information, which remains incomplete, is of interest, as it allows for a more detailed overview of the situation and distribution of the FF sector at national level. Thus, we observe that just over 60% of family farmers can be found in the Northeast and Northwest regions in our country.

15 The National Registry of Family Farming (ReNAF) was founded in 2007 as a basic instrument for the implementation of specific public policies geared towards this sector. Their goals are:

To truly identify Family Farmers as such, in order to enable them to access policies being implemented.

To devise a description of Family Farmers. This description would allow them to be grouped into different categories, according to their conditions and needs, in order to design and facilitate the implementation of differentiated policies.

To count on reliable, trustworthy and updated information in a permanent and timely manner, on all potential recipients of actions and services that the State provides for Family Farming across the country

Information available on http://www.renaf.minagri.gob.ar/

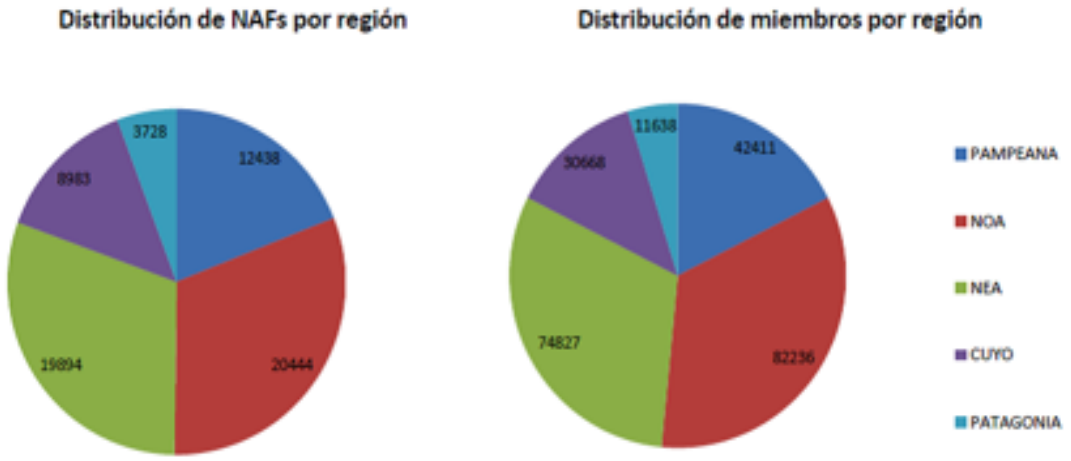

Figure 1. Distribution of Family Farming Centres (NAF in Spanish) and members per region.

As regards the type of production activity developed by FF, scarce participation in activities related to agribusiness and craftsmanship is observed. In this sense, the selected case studies further developed below (agribusiness and goat products), have a huge potential to grow and can be used as pilot experiences to be replicated.

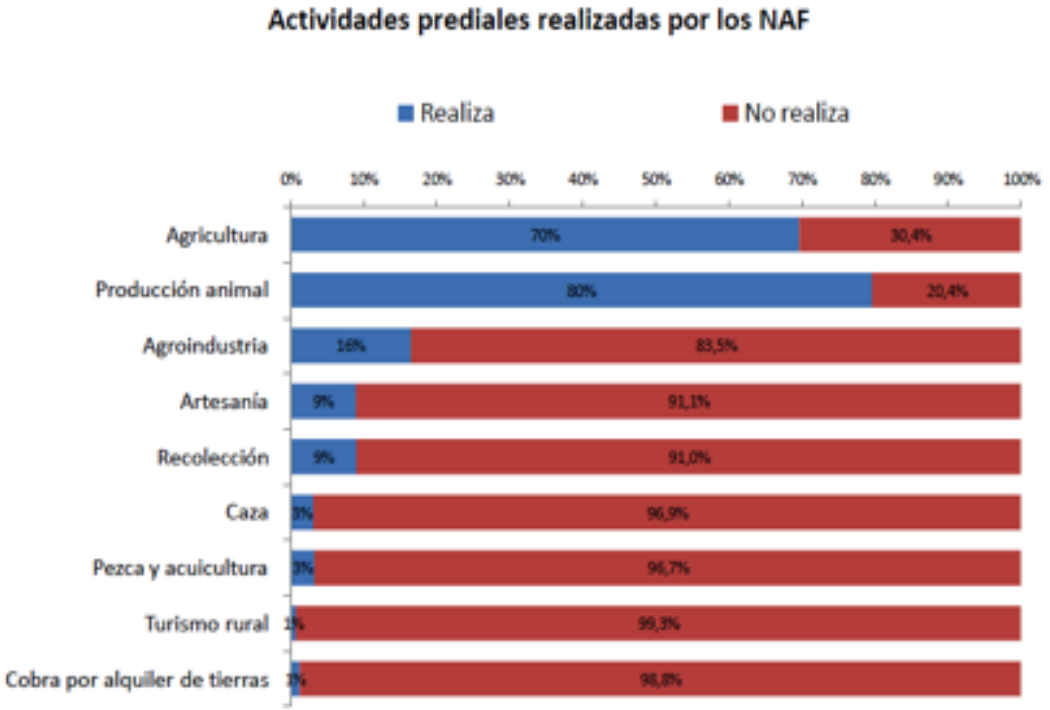

Figure 2. Predial activities undertaken by Family Farming Centres (NAF in Spanish)

As regards access to land, 69% of family farmers do not own land[16].

Concerning the violent expansion of agribusiness on indigenous peasant territories, a draft bill aiming at halting both forced and peaceful evictions has been promoted over the last three years. The draft bill is the result of a group of peasant and family farmers' movements and organisations joining forces to put a halt to violence and evictions from their territories. The draft bill declares "a territorial emergency for a term of five years on ownership and property on rural land occupied by small-scale crop and livestock farmers, peasant families and family farmers." It also calls for "a halt to evictions for five years (including the halt to rulings and administrative actions that pursue this end) and urges for a survey on land ownership and usage to be made during the first three years." For this purpose, the draft bill foresees "the creation of a National Registry on Rural Land Data - within the scope of the Ministry of Agriculture, Livestock and Fisheries. The goal is to determine the real current situation in relation to occupation and ownership of land, having specified valid cadastral and registration data and the occupiers' socio-environmental conditions, in order to establish a national policy that regularises land titles." Clearly, a law of this type would not solve the deep conflicts over territories caused by the hegemony of agribusiness, but it does convey the urgency for survival of indigenous peasants, which is reflected in the National Indigenous Peasant Movement's cry: "*Not a single metre more! The land is ours!*" ("*¡Ni un metro más! ¡La tierra es nuestra!*".) [17]

16 http://www.renaf.minagri.gob.ar/documentos/InformeNacional2014.pdf

17 www.mnci.org.ar

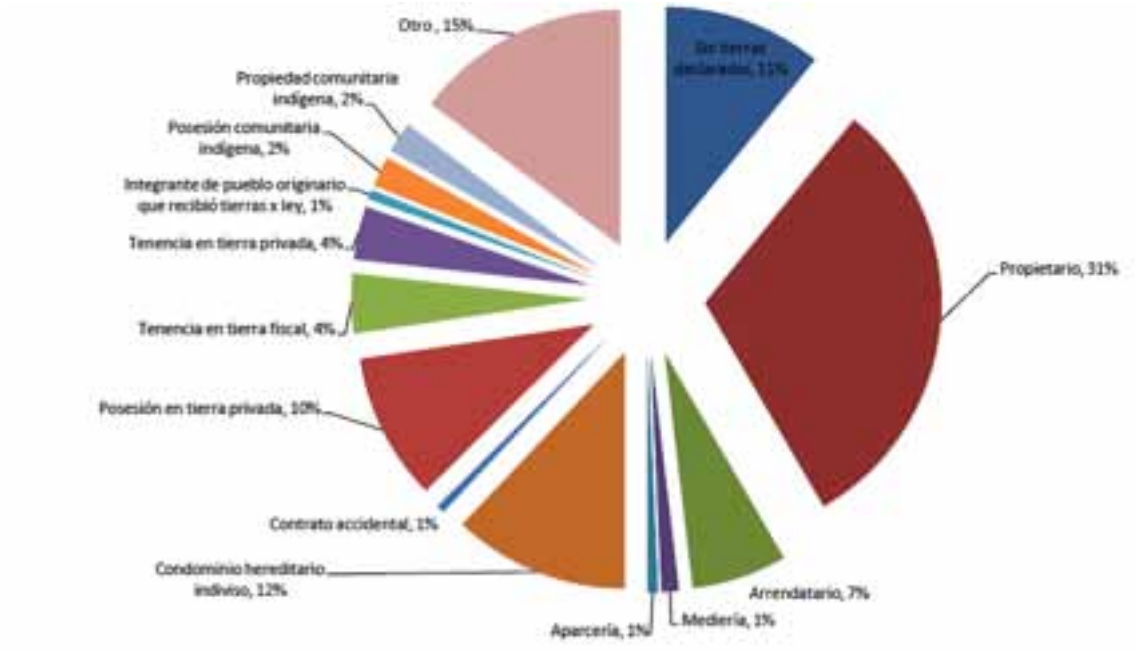

Figure 3. Land ownership.

2. Case studies

The following FF experiences[18] analysed below demonstrate the sector's potential for the production not only of food but also of other essential products: agribusiness production chains (case 1) and goat product chains (case 2).

2.1 Case Study 1. Agribusiness Production Chain: tomatoes and fruit[19]

This experience dates back to 2001 and develops against the backdrop of Argentina's socio-economic crisis. Several rural women's groups started getting together in Mendoza, a province (state) with a history of agribusiness, in order to find a way out of the crisis by following some guidelines.

Answers to questions such as "who is going to pay us?", "how are we going to work?", or "who will lead the actions?" gradually arose during the internal debates, but above all while working and putting

18 Both experiences take place in Mendoza, Argentina, in the framework of the National Peasant and Indigenous Movement (Movimiento Nacional Campesino Indígena) and La Via Campesina in 2014.

19 More information on this experience:

http://www.inti.gob.ar/mediateca/alimentos/tomates.htm#12

http://www.lanacion.com.ar/1350980-una-cadena-con-valor-campesino

http://ust-mnci.blogspot.com.ar/p/nuestros-productos.html

things into practice. Action led to answers: in order to change something outside, we have to start from inside.

The first thing that needed changing was the way of working. There are no bosses or supervisors; during assemblies and group discussions where decisions on actions are taken, everyone's intervention is valuable. One of the main technical workers affirmed:

"I think that the alternative that our organisation put forward took the form of agribusiness chains, which means that the entire productive process that goes from the production of raw materials, the different steps in industrialisation and commercialisation, this entire set of steps, can be developed with organised families. At different organisational levels, but what matters is that they are organised. In the classical agribusiness model, profitability and profit maximisation are the only things that matter, irrespective of social, environmental and commercial conditions and of who the consumers are. However, in these chains, the generation of economic value, participation, environmental conditions, and consumers are all addressed during our discussions, i.e., collectives interrelate and discuss how to improve the process…"

Agribusiness chains seek coherence in all "steps". Human relations are key, which is why workers establish ties for cooperation, solidarity, debate, planning, evaluation and collective decision-making at work, aiming at transforming the relations of exploitation that are predominant in agribusiness.

This chain begins in the greenhouse with the planting of "seedlings", which are then transplanted to the farm to grow tomatoes. Industrialisation takes places after harvesting. One of the women members of the industrial cooperative stated:

"*In the factory, we work in a very different way compared to other factories, don't we? At a company, you have a manager, you have a boss, you have people who control how many minutes you take to go to the loo, they count the minutes … i.e., it is different, different to elsewhere. Here we can work and share at the same time. We can share a mate tea, have a chat, we work in a different way because there is nobody watching over you to check whether you are working properly or not, whether you sit down or stop working for a break for a few minutes. Here we share. Above all we share and work in a different way."*

Women play a leading role in the agribusiness production chain because they are the ones who are traditionally in charge of making sweets and tomato sauce, as they have the traditional and cultural know-how. Homemade goods are gradually being made at an industrial level, which implies remuneration, among other things. Thus, the woman quoted above acknowledges that she feels

differently since she started working at the "sauce factory", because not only does she enjoy the work and does so in a cheerful way, she also generates income for the household.

On the other hand, getting organised, participating, working and taking decisions helps this group of women to develop their self-esteem, as they participate in a growing number of areas, such as the greenhouse, the canned food factory and rearing chicken and goat.

The women workers from the tomato sauce factory approached the National Institute of Industrial Technology (INTI) [20] in order to dispel their doubts and measure the quality of their goods. Ever since the product was analysed, the relationship has grown and has borne fruit. For example, training courses for the factory's women workers have been made available, and there has been follow-up on the development of new products along with the leasing of machinery to produce different products.

The last step in the chain is marketing the products, which is done following the principles of food sovereignty and fair trade. Priority is given to local and regional consumption, although some product is also sent to different parts of the country via fair trade networks. Another woman who is a member of a fair trade organisation explains:

"*The Fair Trade Network was founded back in 2007 more or less based on the needs of some producers to trade their products, to generate spaces for debate as to how they should trade and how they could generate alternatives to the conventional market. What is a fair price for a product that is also fair for the producer and fair for the consumer? This type of trade therefore is different from the capitalist market*", she explains further, "*it basically means that there is no oppression, exploitation or speculation in both the production and trade process, which are common to the conventional market. Each stage of the production chain only charges for the value of the work, and no percentage is added for profit.*"

These chains achieve changes both at an internal level, where we find the actors of the productive process, and at an external level, the consumer.

20 www.inti.gob.ar

2013 in figures

- **Production of tomatoes (on the farm). Quantity of processed tomato boxes.**
- **1,387 of 20 kg.** Farmers receive a credit in order to finance production and return it in the form of tomato production, which is fed into the industrialisation step.
- **Industrialisation**: production included 5194 units of "whole tomato", 9,831 of "chopped tomatoes" of 1 kg, and 2,183 units of half a Kg. **In total 17,208 cans were made** (no more were made due to the lack of capital at the beginning of the cycle). Payment is made per manufactured unit, and units made per week are added, divided by the hours worked, having established a price per hour based on performance. Daily output: 506 units (50% more than the previous year)
- **45 families** participated in the different steps of the production chain (production of seedlings - tomato production - industrialisation - commercialisation).

Figure 4: Development of production per unit of tomatoes between 2007 and 2013.

2.1 Case study 2. Production chain for goat products

The chain for goat products is organised in different lines according to the final product, and includes "chivato" meat or "cabrito" meat (meat from an animal of up to 6 to 7 kg), "capon" meat (meat from a larger male animal), "cabra vieja" meat (old goat meat for industrialisation in the form of sausages) or leather. Below, we analyse goat leather, as it is the most developed and innovative case. The chain starts once the animal is slaughtered and the hides are stored in sheds that have been set up in rural communities. The next phase is "tanning" and this is done in a "reclaimed"[21] factory by a Cooperative of United Tanners, which is made up 100 workers who got organised and reclaimed the factory in 2002 and are still running it today. They then linked up to a cooperative of shoemakers that make "espadrille shoes"[22], and lastly, commercialised the shoes through a fair trade system.

In this case study it is worth mentioning that, unlike the previous case study where agribusiness is predominant, the production of goat products in Argentina is closely linked to peasant family farming.

This type of production is associated to local knowledge and to life on those territories that are considered "marginal" by agribusiness, and where there is a relation between forms of production (land, capital and work), hence this sector is almost the only remaining productive area. Therefore, compared to other livestock (except for very regional productions such as Llama and Guanaco), the goat-rearing sector accounts for 85% of peasant family farming.

In table 2 we observe the relative importance of both sectors (family and non-family farming). In terms of province or agroecological region, the percentage oscillates between 74,1% in the Humid Chaco and 90,3% in Puna.

Table 2. Relative importance of family and non-family farming sectors.

Livestock	Amount of animals linked to family farming	Amount of animals linked to family farming	% of family farming in this area
Bovine	12.500.000	36.000.000	25%
Bovine for dairy farming	1.150.000	2.355.000	32%

21 In "reclaimed" factories, workers have taken over control of the factories in which they had worked in order to run them as non-capitalistic cooperatives. This usually happens when the former owners try and close down the factory, arguing that it is no longer profitable and claiming bankruptcy in order to avoid settling debts with the workers. These factories are most common in Argentina, where they mostly emerged after the 2001 crisis.

22 The espadrille is a type of shoe, typically used by peasants in Argentina, and made from natural fibre thread, such as hair, cotton, leather or canvas, on a rubber or hemp soul.

Sheep	3.100.000	9.400.000	25%
Goat	3.347.000	714.190	82%
Beekeeping	572.000	889.000	32%

Source: Obschatko et al, 2007.

Neuquen, Santiago del Estero and Mendoza are the provinces with the highest percentage of animals in terms of distribution in Argentina, followed by Salta, Jujuy, Chaco, Formosa and Rio Negro. Regarding the total number of farms linked to the sector, there are 40,000 family farms (from a total of 251,000). According to this information, there are thus 131,700 people involved in peasant family farming.

Against this backdrop, the production chain of goat products is organised in accordance with the following principles:

1) Ancestral knowledge, culture and tradition contribute to this activity. In a globalised and homogenous world, contributions from a local and diverse perspective are evermore valued.

2) It is a very efficient activity in terms of electricity.[23] From a perspective of neoclassic economics, this sector is not particularly taken into consideration; however, it has started to gain ground since agriculture and livestock rearing in agribusiness consumes a lot of energy. This production of animal protein consumes the least. We should bear in mind that there are no external inputs, except for in some cases, such as supplementary forage, FMD vaccination, and any other health product, such as calcium.

3) This activity protects and improves native forests.

This experience involved fifty families from organised communities in the province of Mendoza (San Rafael, Malargue, San Martin and Lavalle departments). These families work mainly in goat rearing.

This goat "subproduct" is practically priceless for families. By working together with the Cooperative of United Tanners and tanneries, we managed to eliminate middlemen and to pay producers 10 times more than what they paid beforehand (from $1,5 per hide to the current $15).

Alternatives were then found in order to continue adding value to the chain. This is how the idea to manufacture shoes arose. Having tried several possibilities, the espadrilles turned out to be the best option,

23 "Energy crisis and livestock production" http://www.magrama.gob.es/ministerio/pags/biblioteca/revistas/pdf_ays%2Fa024_04.pdf

because, not only are they popular shoes, leather also accounts for 50% of the cost. The shoes are manufactured in two artisanal family factories in the city of Mendoza.

The espadrilles are commercialised on a Fair Trade Network that spans Mendoza and Buenos Aires, but they are mostly sold at a local level, among peasant communities of the National Indigenous Peasant Movement.

The chain is made up of four steps in this case: the production of leather on the land; tanning leather at the tannery; design and manufacturing of the espadrille; and commercialisation.

The added value outline in figures
Producers own flocks of up to 200 to 300 goats, so they obtain approximately the same amount of hides every year. The producers have been paid an average of $15 per hide. A goat leather producer can therefore receive about $4,000 in this chain. Should all the leather be transformed into espadrille shoes, the producer would make 30% more in revenues.

3. Conclusions and policy reccomendations

The objective of this work was to systematise production experiences and to give visibility to peasant family farmers and their contributions to food production, rural development, food security and food sovereignty. The analysed case studies confirm that peasant family farming recuperates local and traditional knowledge, and underscore the value of best practices for food security and food sovereignty. Similarly, in the agribusiness case, the production chain is a viable proposal for addressing food insecurity and poverty in rural areas, by making available high quality and affordable locally made products to local consumers.

Additionally, these chains lead to sustainable management of environmental resources, as they add value to horizontal chains that favour economic sustainability in family farming. The integration of local farmers in these chains drastically reduces transaction costs and losses that represent enormous energy costs in agribusiness.

From the social point of view, it is important to highlight that the actors of each step take decisions together and in assemblies, by identifying the common risks, costs and profitability related to each step. In addition, in all analysed cases, the people undertaking these activities come from rural areas, and thus improve their strategies in economy consolidation and development, while making them more sustainable. In this sense, family farming is clearly contributing

towards sustainable food systems.

By seeking not to "lose the product's properties" through the added value and the development of local markets, there are significant lessons learned that can be replicated for other products and/or contexts.

Based on the PFF context and the cases analysed above, we suggest the following **policy recommendations**:

- To develop strong public policies that place youth at the centre of strategies to strengthen family farming. To develop promotion campaigns and programmes in the outskirts of cities and towns.
- To guarantee the access to land, territories and water for the sector. The offensive undertaken by agribusiness against FF land has gained ground, not only because of the weaknesses found in the sector, but also and mainly due to complicity of justice, which has denied the existence of PFF, relegating it to state's assistance as "poverty containment".
- To promote a policy to strengthen the sector's political and union organisation. To protect the sector from political and social criminalisation.
- To invest in research, technological development and training for the sector. Appropriate technologies. Agroecology.

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EU: Peasant Family Farming, a challenge to gain[24]

Introduction

"*The modern family agriculture, dominant in Western Europe and the United States, has proven its superiority over other forms of agricultural production. The output per worker / year which characterizes it (the equivalent of 1,000 to 2,000 tons of cereals) has no equivalent, and allowed a small segment of the population (of the order of 5%) to feed the entire country richly and even generate surpluses exportable. The modern family agriculture has also demonstrated an ability of absorption of exceptional innovations and a lot of flexibility to adapt to changes in demand*"[25] - (Samir Amin)

24 This chapter is produced by ASSOCIAZIONE RURALE ITALIANA

25 Farming, modern family farming - Observatory on the Social Economy and Regional Development. Samir Amin(no date)

In the EU, the peasant family agriculture is the major component of agricultural production, but it remains difficult to give an exact definition. A clear reference - not exclusive and must be applied in a specific way in each country - is the economic and territorial dimension of a farm.

"... The Small Farms are an important agricultural and rural reality of Europe. Still dominant throughout the EU27, they represent wealth in terms of multi-functionality for the agricultural economy and society as a whole in terms of employment, land use, keeping biodiversity , landscapes, economic efficiency and simplicity in the use of common property... ...."[26].

1. *EU: land tenure as the basic element structuring the PFF*

There were 12.2 million farms across the **EU-28** in 2010, working 174.1 million hectares of land (the utilised agricultural area) or two fifths (40.0 %) of the total land area of the EU-28. In a more recent communication from EUROSTAT (August 2014), the data are better defined, only 25% of the area of the EU-27 is considered to be the cultivated land and the 20% of the land is considered just pasture land.

The distribution of agricultural land is fundamental for understand the agrarian structure of the EU and have a reference to the structural dimension of social and economic value of peasant family farming.

*"The average size of each agricultural holding (farm) in the **EU-28 was 14.2 hectares**. However, there were stark contrasts in the structure of agriculture across the EU: on the one hand, **there were a large number (6.0 million or half of all holdings) of very small farms** (less than 2 hectares in size) that **farmed a small proportion (2.5 %) of the total land area** that was used for farming in 2010 and, on the other, a small number (**2.7 % of all holdings) of very large farms** (over 100 hectares) that farmed almost half (50.2 %) of the farmland in the EU-28"[27] .*

26 " Small Farms and short circuits in the European Union" – Position paper European Coordination Via Campesina – 20/04/2013,

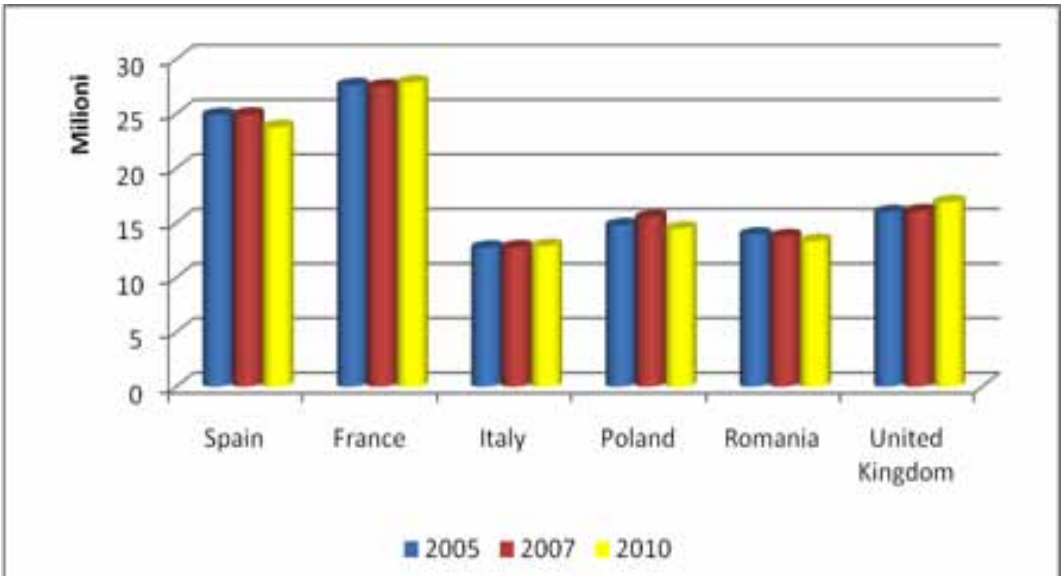
27 EUROSTAT: http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Agricultural_census_2010_-_main_results

For greater detail, we compared the 6 European countries that have the greatest extension of the UAA (Utilized agricultural area) and have elements which define the value of family farming in agrarian systems of large size and complexity.[28]

Land use:

Total
HA: Utilised Agricultural Area

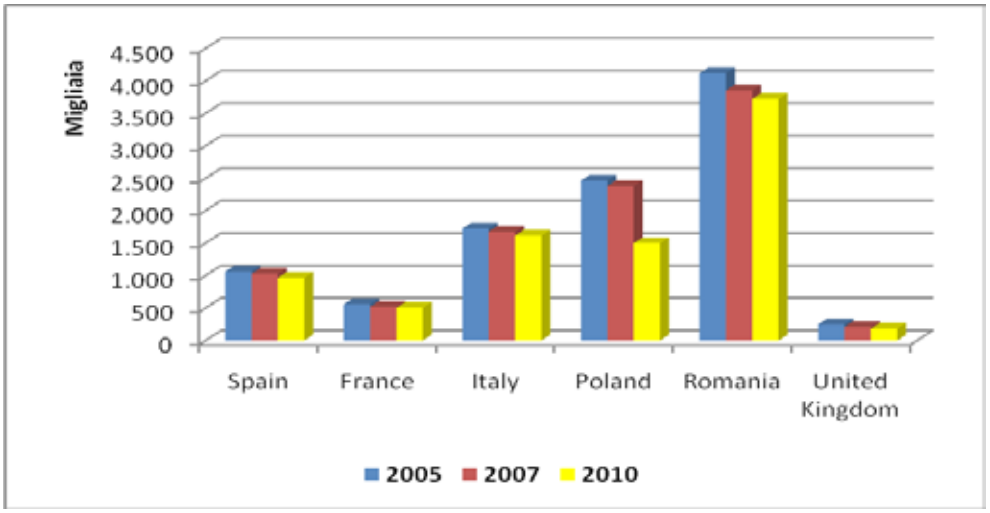
GEO/TIME	2005	2007	2010
Spain	**24.855.130**	**24.892.520**	**23.752.690**
France	**27.590.940**	**27.476.930**	**27.837.290**
Italy	**12.707.850**	**12.744.200**	**12.856.050**
Poland	**14.754.880**	**15.477.190**	**14.447.290**
Romania	**13.906.700**	**13.753.050**	**13.306.130**
United Kingdom	**15.956.960**	**16.043.160**	**16.881.690**



28 all following tables from : http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Agricultural_census_2010_-_main_results

HOLD with Utilised agricultural area
TOTAL by selected country

GEO/TIME	2005	2007	2010
Spain	1.062.810	1.029.990	967.290
France	561.560	521.960	506.620
Italy	1.725.590	1.677.770	1.615.590
Poland	2.465.830	2.380.120	1.498.660
Romania	4.121.250	3.851.790	3.724.330
United Kingdom	248.420	209.030	182.660

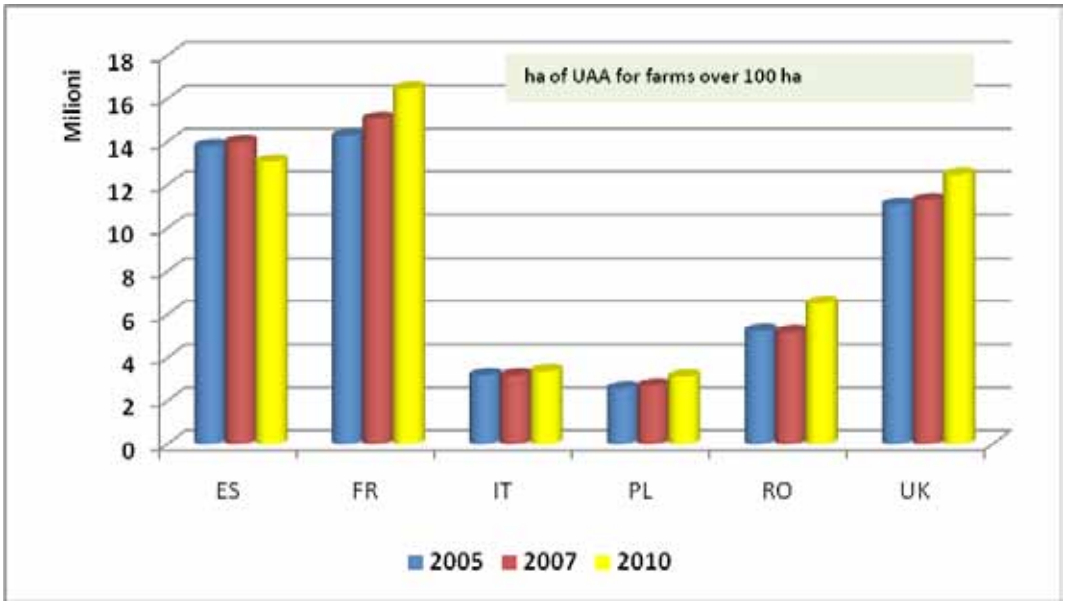


A breakdown by farms size, highlights the economic and territorial space occupied by large farms – that can be also FF as "*Business Enterprises including Farmers*"[29], those with 100 acres or more.

UAA in_HA
100 ha or over

GEO/TIME	2005	2007	2010
ES	13.792.150	13.975.170	13.089.450
FR	14.270.680	15.063.250	16.453.960
IT	3.183.270	3.176.730	3.370.460
PL	2.571.810	2.707.800	3.120.900
RO	5.225.560	5.172.370	6.508.390
UK	11.075.820	11.296.080	12.481.400

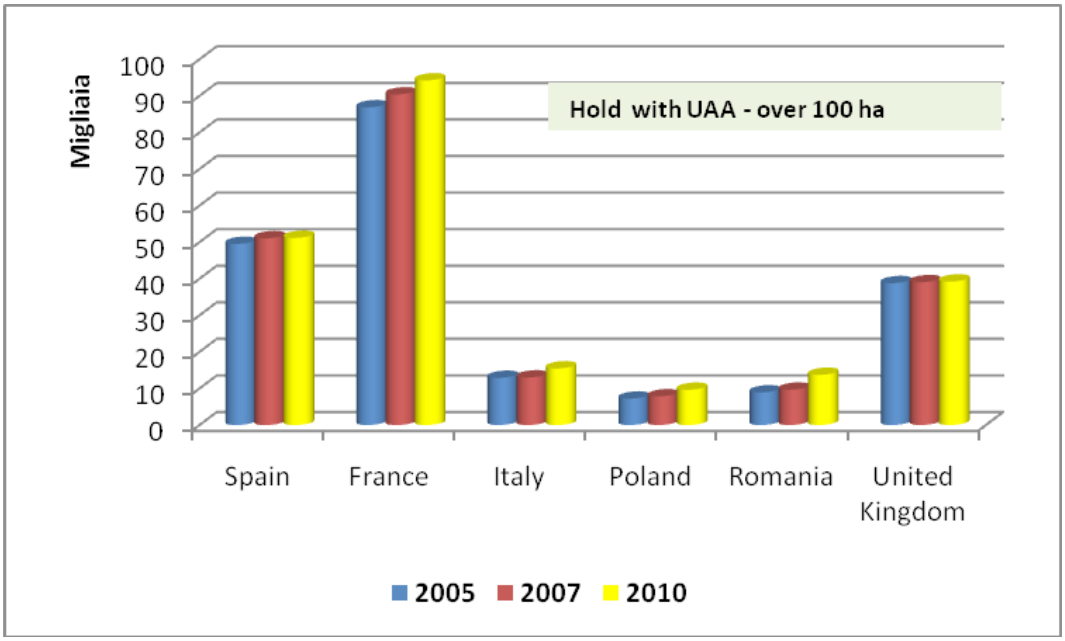
[29] As defined in: http://www.fao.org/fileadmin/templates/cfs/Docs1314/rai/Endorsement/CFS_RAI_Principles_For_Endorsement_Ver_11_Aug_EN.pdf



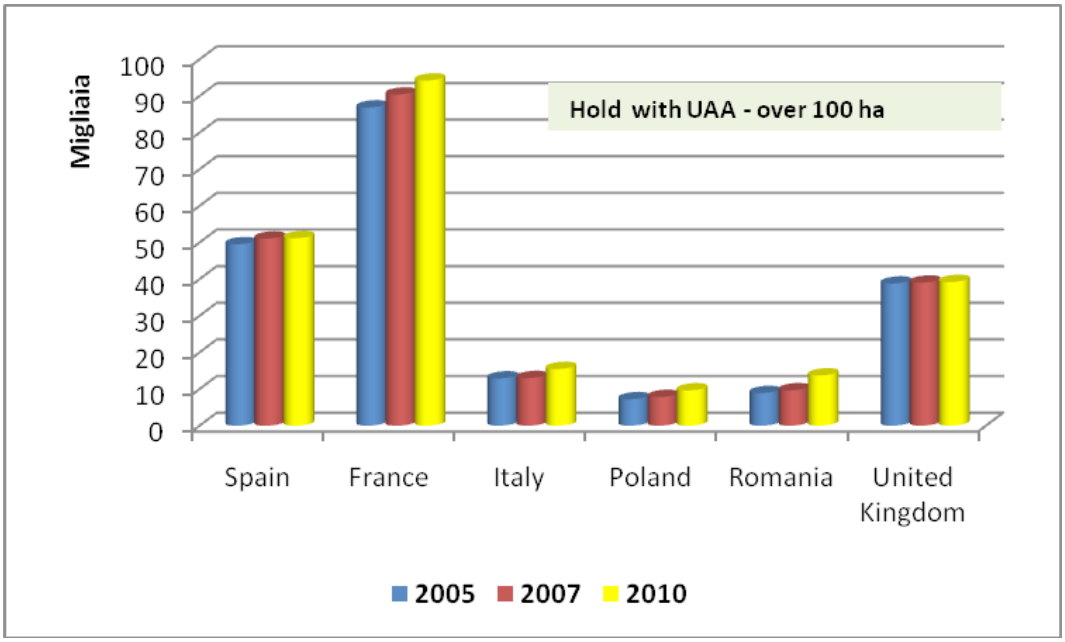
Only in Spain, we can see a slight decrease in the concentration process of agricultural land in large size companies, in other countries taken as a reference concentration is constantly growing.

HOLD with Utilised agricultural area 100 ha or over

GEO/TIME	2005	2007	2010
Spain	49.540	51.080	51.190
France	86.880	90.410	94.250
Italy	12.910	13.010	15.490
Poland	7.230	7.850	9.650
Romania	8.930	9.660	13.730
United Kingdom	38.810	39.060	39.240



The simplicity of the graphical representation highlights how farms with a size greater than 100 hectares grow in number and total acres cultivated, in the context of a dramatic reduction - in the same period - the total number of farms.



The processes of concentration, although at different rates in individual countries, have amplified over the past 5 years.

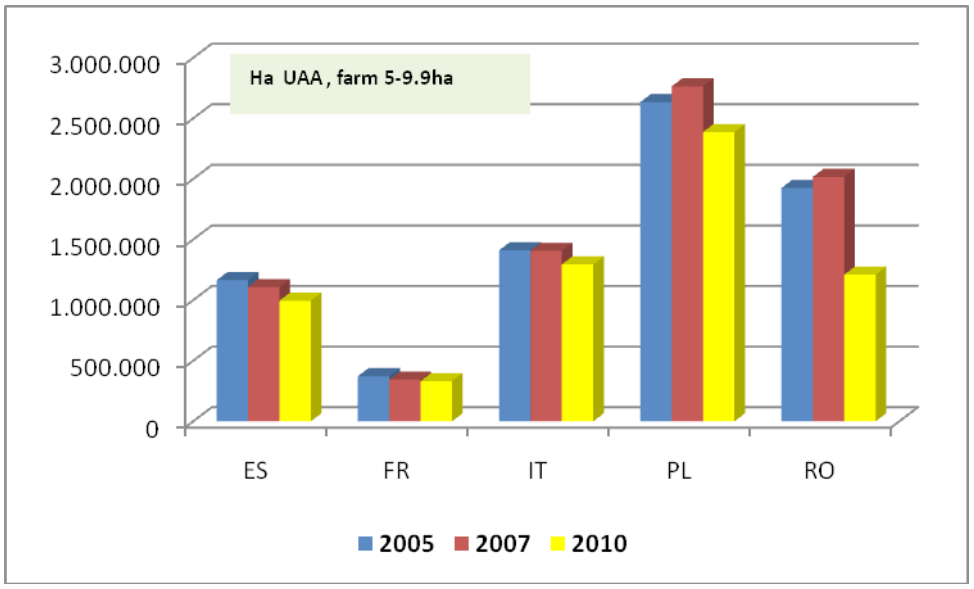
Farms ranging from 5 to 9.9 hectares have known a steady decline in each of the 6 countries. This size of farms, in general, is the minimum size to build up a farm that can remain economically viable.

The reduction of their number has a very important consequence with respect to the sustainability of more general rural production systems. Their crisis goes far beyond the crisis in the agricultural sector; it affects other sectors and slows or prevents rural and national economic development.

Despite this, farms ranging in size from 5 to 9.9 hectares, remain at the heart of European agriculture, maintain a vital and productive numbers, even if the agricultural land they occupy tends to decrease, that decrease is offset by an increase commitment to work in the family farm[30] and in related activities capable of supporting the total **income** of the family.

UAA: HA
From 5 to 9.9 ha

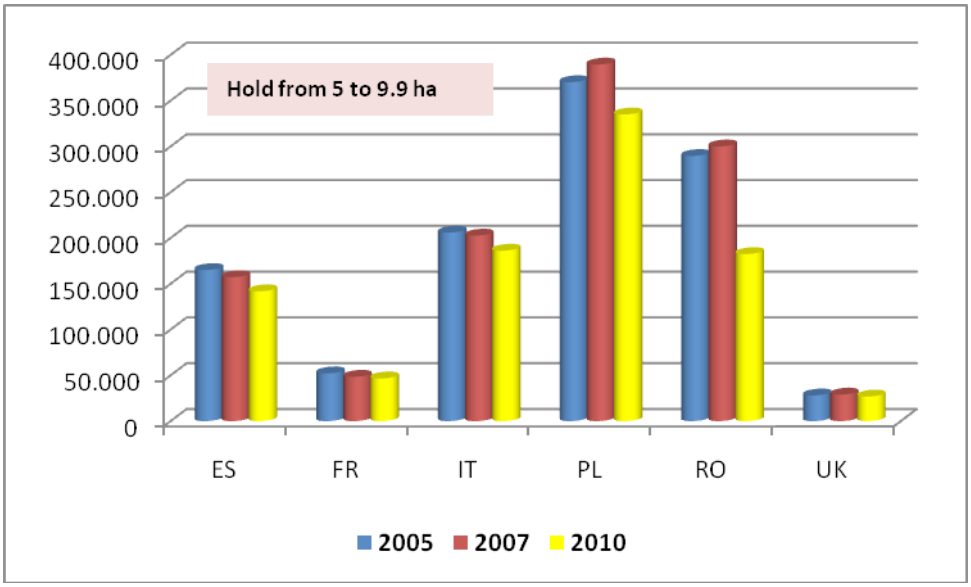
GEO/TIME	2005	2007	2010
ES	1.165.380	1.108.680	995.440
FR	372.880	344.440	332.500
IT	1.411.610	1.407.880	1.295.300
PL	2.634.550	2.764.190	2.387.340
RO	1.926.390	2.017.540	1.210.510
UK	202.580	208.810	194.550



30 See as references : agriculture census 2010 in Italy - ISTAT

HOLD
From 5 to 9.9 ha

GEO/TIME	2005	2007	2010
ES	164.960	157.250	141.850
FR	52.160	48.460	46.640
IT	205.880	202.560	186.150
PL	370.200	389.400	334.950
RO	289.580	300.000	182.440
UK	28.070	29.010	26.850



2. EU: Economic dimension of peasant family farming.

The economic dimension or standard output (SO) of farms also provides us with an image of the unjust distribution of income among rural populations in Europe (ref. to the countries here taken as a reference).

There is a strong polarization of CAP support[31] to large and very large farms, and this support is a critical component of business income. This unfair allocation is a strong element of marginalization of production systems based on small-scale farms.

31 http://ec.europa.eu/agriculture/cap-funding/beneficiaries/shared/index_en.htm

The table shows the hectares of UAA controlled by farms that receive more than 500.000 euros/year

500 000 euros or over

HA: Utilised agricultural area

GEO/TIME	2005	2007	2010
Spain	1.516.680	1.446.590	1.270.540
France	914.700	999.990	1.313.560
Italy	1.230.430	1.251.020	1.406.640
Poland	1.009.000	1.026.420	1.330.850
Romania	1.424.900	1.316.500	1.604.300
United Kingdom	1.474.810	1.586.190	2.225.160

Farms in Spain with an SO of more than 500.000 EUR occupy only about 5% of the UAA, in Italy more than 10%, in the UK almost 14%. Only in Spain between 2005 and 2010, the area occupied by them is decreased in proportion to the decrease of the total UAA.

For the six countries in 2005, these farms with more than 500.000 € of SO accounted for 0.28%, in 2010 had risen to 0.44%: nothing proves better than these figures the failure of a policy of strong capitalization in agriculture motivated by an attempt to increase the economic scale of farms of each layer.

Farms of large and very large economic size are not numerically significant but able to capture a large share of the UAA, that is also "the right to produce", crushing the peasant family farms under the grip of unfair competition between production facilities that will not be comparable in terms of market power and in terms of public support it received that form an important part of the business income of the larger farms.

"...This contrast was also reflected in the economic size of holdings. Of the 12.2 million agricultural holdings in the EU-28 in 2010, 5.5 million holdings (44.6 %) had a standard output (SO) below EUR 2 000 and were responsible for only 1.4 % of total agricultural economic output in 2010. By contrast, the 1.9 % of holdings that had a standard output in excess of EUR 250 000 accounted for almost

one half (47.8 %) of all agricultural economic output ..."[32]

Summarizing: in EU 27 (EUROSTAT and 2010 census), in the presence of a total collapse in the number of farms under 30 hectares, in general we have:

i. the 70% of farms have a size of less than 5 hectares
ii. The 80% have a size between 0 and 10 hectares
iii. The 89% have a size between 0 and 20hectares
iv . Only 5% have a size of more than 50 hectares

3. Italy and peasant family farming

In Italy[33], in 2010:

a. The small farms are still the most important part of the agriculture sector, even in areas with a high concentration like milk production, small farms account for a quarter of the animals heads and of almost 50% of milk farms;

b. in fruit and vegetables (including wine and oil) production, large farms are an exception in terms of the number and value of production;

c. farms with exclusive use of wage workers remain the exception in terms of the number and weight of the total value of agricultural production

d. Small farms that produce exclusively for their own consumption are essentially a very marginal phenomenon in terms of numbers and quantity of production. In fact, part of the production that ends up on the local market leaves no statistical trace[34] and is therefore considered "statistically" just as "household consumption" and by consequence is presented under the heading "household consumption".

4. The case study

Peasant family farming in the EU is characterized by a number of key issues, including access to land, the need for a strong work-intensive mode of production and, the need to generate income through recovery activities that add value to their production or through non-farming activities. To demostrate this, an example will be used. It

32 EUROSTAT - http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Agricultural_census_2010_-_main_results

33 ISTAT – Agriculture census 2010: http://www.istat.it/it/censimento-agricoltura/agricoltura-2010

34 ISTAT - I risultati economici delle aziende agricole (RICA-REA), annual rapport

involves a farm, built from scratch and without any special public support thanks to the skill, commitment, professional competence and innovation of a woman and her family. The farm of Maria Paola is located in Monastero Bormida, a municipality in Piedmont, Italy.

Often doomed to invisibility, peasants- especially women - do not have many opportunities to tell their own stories. Many exercises, especially academics or "experts" interpret reality of peasant agriculture through many personal filters, ideological and cultural. Ultimately, they are not able to report, at least in part, the experience with all its complexity of social relations, cultural, emotional, territorial dimension. For this reason we have chosen that - after discussing it at length with Maria Paola - the presentation of her experience is made directly through her personal narrative.

The farm of Maria Paola is an example of difficulty, but also the success of family farming in Italy. Her farm is situated in Piedmont, a region of Italy that have an important place in the national agriculture.

4.1. The Piedmont region and is agriculture system

"The active farms in Piedmont are 67.148 and covers 4.1% of the national total. The total Agricultural Area and the Utilized Agricultural Area (UAA) represent respectively 7.6% and 7.8 % of the corresponding national data."[35].

A process of concentration of the land use is increasing, "…*the average farm size has grown over the last decade, from 10 hectares to 15 hectares of UAA in 2010*..."[36] ". The number of farms decreases, but there was an increase in size. In particular, the very small farms tend to disappear, and with them, even the typical and traditional crops.Their lands are acquired by other farmers within a process of concentration "*…activated in response to the new demands of the market and the consequent pressures towards the adoption of more complex forms of organization"*[37]

The agricultural system of the Piedmont is strongly characterized by the presence of family farms: 76% of farms are counted as farms operated exclusively by the farmer himself. The 77% of the total labor force in the regional agriculture is composed primarily of family labor.

35 ISTAT – agriculture census, 2010 et previous

36 ISTAT – agriculture census, 2010 et previous

37 ISTAT - idem

PIEDMONT – DATA CENSUS 2010

Juridical status	HOLD		Absolute Delta	Delta	UAA		Absolute Delta	Delta
	2010	2000		%	2010	2000		%
Individual farm	62.394	103.707	-41.313	**-39,8**	768.996,43	799.443,51	-30.447,08	**-3,8**
Individual farm company	3.448	2.253	1.195	53,0	160.301,28	105.057,32	55.243,96	52,6
Other companies of persons	308	215	93	43,3	7.610,50	6.050,04	1.560,46	25,8
Capital company	300	157	143	**91,1**	10.528,73	5.124,39	5.404,34	**105,5**
Cooperative company	100	82	18	22,0	3.499,77	3.360,71	139,06	4,1
Other juridical status	349	555	-206	-37,1	95.953,15	149.836,62	-53.883,47	-36,0
of which Public authority	*130*	-	-	-	*56.226,93*	-	-	-
Authority or municipality that manages collective properties	*93*	-	-	-	*37.411,23*	-	-	-
Private non-profit company	*59*	-	-	-	*1.739,83*	-	-	-
Others	*67*	-	-	-	*575,16*	-	-	-
Total	**66.899**	**106.969**	**-40.070**	**-37,5**	**1.046.889,86**	**1.068.872,59**	**-21.982,73**	**-2,1**

The following table shows both the importance of family farms and the dramatic reduction in their number occurred in the period 2000-2010. Interestingly, the farms operate with sole wage labor have lost over 45% of the UAA.

Type of management	HOLD		Absolute delta	Delta	UAA		Absolute Delta	Delta
	2010	2000		%	2010	2000		%
Farms operated exclusively by the farmer himself	64.295	103.904	-39.609	**-38,1**	868.415,52	870.181,92	-17.66,4	**-0,2**
Management with wages labor	1.901	2.978	-1.077	**-36,2**	108.491,52	198.332,94	-89.841,42	**-45,3**
Other forms of management	703	87	616	708,1	69.982,82	357,73	69.625,09	19.463,0
Total	**66.899**	**106.969**	**-40.070**	**-37,5**	**1.046.889,86**	**1.068.872,59**	**-21982,73**	**-2,1**

The dairy farming is the dominant agricultural activity in the Piedmont

region along with the production of wine and grapes. As data shows a strong process of concentration ongoing. Thelargest dairy farms (over 100 cattle) increase and increase the number of animals that they control, the smaller decrese in number and in cattles.

Farms with herds of dairy cows and cattle class. Years 2010 and 2000

Cattle class	Farms		Absolute Delta	Delta	Number of cattles		Absolute Delta	Delta
	2010	2000		%	2010	2000		%
1-2	737	1.241	-504	-40,6	1.109	1.881	-772	-41,0
3-5	557	1.055	-498	-47,2	2.177	4.065	-1.888	-46,5
6-9	389	631	-242	-38,4	2.862	4.517	-1.655	-36,6
10-19	529	971	-442	-45,5	7.168	13.336	-6.168	-46,3
20-49	828	1.654	-826	-49,9	26.359	51.647	-25.288	-49,0
50-99	666	917	-251	-27,4	45.644	60.768	-15.124	-24,9
100-499	374	235	139	59,2	57.935	33.115	24.820	75,0
500-999	3	1	2	**200,0**	1.768	538	1.230	**228,6**
1.000-1.999	1	1	-	-	1.230	1.000	230	23,0
2.000 ed oltre	-	-	-	-	-	-	-	-
Total	**4.084**	**6.706**	**-2.622**	**-39,1**	**146.252**	**170.867**	**-24.615**	**-14,4**

4.2. Monastero Bormida[38]

The farm of Maria Paola is located in Monastero Bormida, a municipality in Piedmont.

Monastero Bormida is a village of 997 inhabitants. The village was founded by Benedictine monks in 1050 in the valley of the river Bormida, known in Italy for having been one of the most polluted rivers (due to chemical plants) in the country, which puts stress on agricultural production. However,there are 123 farms covering a total of 661 hectares of UAA.

Only one farm has a size between 50 and 100 hectares, 93 farms cover less than 10 hectares, and 29 cover 5 to 10 hectares of UAA and in total cultivate 124 hectares.

38 ISTAT – agriculture census, 2010

All of the farms have a purely family structure, and a larger holding has only 38 hectares of UAA. It is worth noting that, in terms of theoretical calculation, agricultural activity is covered by approximately 24,000 working days (2010), of which 13,000 are held in farms with a size of less than 10 hectares.

In terms of economic size, 75% of farms have an economic dimension less than 25,000 €, one has an economic dimension of just over € 250,000, 34 between 25,000 and 100,000 €, 7 between 100,000 and € 250,000[39]. As a reference, the normal cost of a year's wage labor is around 32.000€.In reality, 75% of farms, small in economic dimensions, don'tproduce a full, decent annual wage.

5. Maria Paola and history of resistance and success

Peasant farming in Italy and throughout Europe is marked by successes and failures, resistance and surrender. The history of any peasant family is emblematic of broader social processes and constitutes an exemplary synthesis, thus providing many tools to understand the evolution of the production system typical of peasant agriculture. Common elements can be found by looking at families and farms in Italy, France, Spain, Poland, and Romania.

The personal story of Maria Paola - as she report in this exercise - is only one of many stories of European farmers, with its specificity, but also with its large representation of the evolution of peasant agriculture at the present day.

My father, Domenico, was born in 1927 in Monastero Bormida. He was the first of ten siblings to peasant parents who owned approximately 5 hectares of land in the hills 3 km from the village. At age of 17 he enlisted in the police as a way to escape farm work, fatigue, and poverty. In 1958 he married Fernanda, my mom, the third of six brothers and sisters, from Monastero herself. She was the daughter of farmers. My father's job took them to Liguria, near the border with France, and then in Friuli, near the border with Yugoslavia in a town called Cave del Predil - which has an ore of iron, zinc and lead. My childhood was great, the mine attracted people from various regions and different nationalities. This created cohesion and cultural exchange.

39 ISTAT – agriculture census, 2010 et previous

After work, my parents would go fishing, mushroom and snail picking, and would pick herbs or wood transported by the river - from which my father would carve anthropomorphic sculptures (a word that I did not understand at the time). My mom, although we were at 1500 meters above sea level, was able to cultivate salad and herbs on a small piece of land. The devastating earthquake of 1976 caught us by surprise, and the plan of buying a house for my parents' retirement evanished. The decision was then to return to the village of origin: Monastero Bormida.

The return to land, a refuge and security when everything seems be destroyed and everything has to be rebuilt.

We went back to my mom's house. The house was empty; none of the five brothers had stayed to work the land. One had immigrated to Switzerland, another was a FIAT worker, and another was a technician at a research institute in Turin. My parents resumed with pride their agricultural activity. My mother created diversified cultures and farms, converted a room so as to breed chickens (which were bought by traders at the village market). A portion of the land was planted with vegetables. My parents also built fences for breeding pheasants.

I spent my summer holidays here at Monastero at my grandparents' house and, through my child's eyes I saw work and effort all the time. However, we took pleasure in climbing trees and eat the fruit, exploring the garden with many vegetables, observing the oxen and bees – of which I was afraid – and listening to our grandparents' tales.

Maria Paola begins to build her knowledge by learning from rural tradition and the exchange of experiences in the family and in the village. A process that is common to all European peasant agriculture in the construction of new knowledge and innovations.

Each tree had a story: the fruit it would have produced, the right moment to prune it, how to pick the fruit. The same applied to the garden: everything had its time. The manure as well was at the heart of many stories: every animal would produce manure for a specific plant. Rabbits produce exceptional manure for roses and vegetable gardens' vegetative phase. Mature cows' manure makes

the ground soft, airy and ready to receive the seeds or seedlings. Hens' manure should be left stand at least 6 months, otherwise it could be dangerous.

Life in the farm, through the eyes of a child, mixes with play. A child does not see the efforts and what remains is a memory full of innocence and attention for an activity that seems magical: growing plants and animals, being in nature, observing evolution and change. This component is also deeply rooted in rural culture, even today in agricultural systems most developed and modernized, where the small farms, peasant family farming continue to evolve, resisting changes that make them vulnerable and building alternatives and innovating, in order to consolidate its specific mode of production.

Supplementing the family income to meet the costs of education is a recurring necessity in the rural areas. For a young girl, who still lives the rural areas with no alternatives, there are few job opportunities offered by the village.

With the fall everything would end, and I would go back to my mountain village. I never thought I would have gone back. After high school in Asti my dreams were taking me away, I wanted to travel the world, work abroad, and escape from the mediocrity of Monastero Bormida. Finding a job was not easy. Of course, I never lacked goodwill. I worked in a restaurant as a waitress on Sundays, since I was 16 years old. I worked at a market stand, I sat children and elders, I worked for two seasons at hotels and restaurants, and then I worked one season for a company with 5 hectares of vineyard.

Then, following the evolution of the structure of his family remained largely rural, emerges the possibility of returning to work the land.

The division of the family land inspired my uncle. He planted a vineyard. Of course, it was impossible for him to work on it so he delegated us. With my sister's help, we bought a tractor, and it was easier to do work without having to ask or pay someone.

5.1. Back to farming.

The success of peasant agriculture has always depended on diversifying production andsources of income in order to mitigate economic risks related to agriculture.The difficulties emerge rapidly and, for the most part, are social and cultural. *I had big problems with peer adaptation at the village. Other kids were not used to play, get together, or perform activities together such as sports, music, embroidery, singing, dancing. This happened even among adults. There were neighbors who would not speak to each other and would hold old grudges related to things like a property line or a road: conflicts that sometimes had been dragged for decades, even generations. The country's population was made up of many elders, and few young people. Those who lived in the country were considered to be limited; there was no respect for peasant work and the farmers followed the same old work systems made of hard work and little compensation.*

The evolution of any family farm is strongly rooted in the family story.

My situation became complicated due to my father's death. I was still young and had just started going school in Asti, far from home. My mom - without a driver's license - had to leave the rearing of chickens and pheasants; the land was worked by contractors; my sister moved to the mountains to work as a seasonal worker; I was still a student…those were hard times.

The situation got worse with my grandparents' death. My mother became homeless, and embarked on the long process of purchasing their land and building our house. My mom never gave up. She loved the land, this land that now is our farm, which had caused her so many conflicts with her dad.

Building a farm requires investment, money that a peasant family doesn't have. Extra-sector jobs need to provide such financial resources that have to be invested in the farm. Difficulty of access to land and the need to have a minimum financial availability are the problems that Maria Paola and her family have to face, like any peasant family.

I got a job as a secretary to a dentist for 5 days a week. This would have provided some money at the end of the month and,

thanks to the tireless help of my mom and to my dad's pension, we started the investment to have the possibility of farming. In 1999 I got married to Sergio, son of farmers, self-employed. With him, we started to design a more efficient farm. By taking advantage of the public funding for young farmer's settlements (even though I was 36 years old), we built a shed for tools and a barn. The money I was entitled to arrived after 4 years. This slowed down a lot work, but the decision to settle on this land forever was taken.

Many things were really difficult. My husband and I wanted to grow organically. It was important for us but difficult to explain to the rest of the family. "You will not be able to grow anything without herbicides and fertilizers" my father in law told me. He, under the suggestions of technical sector unions, would use herbicides even the yard where his hens were! But we were stubborn and demonstrated that it is possible to do it. Over the years, with my mom, we were able to strengthen our wonderful breeding of bees. As a result I had to prepare a suitable place where to perform honey extraction.

5.2. Peasant agriculture meets CAP

Starting with small scale production and investments to build a farm economically and ecologically sustainable was the decision taken by Maria Paola's family. And they refer to possible funding from EU CAP resources. She decides to start an "agriturismo", a farm B&B, normally supported by EU funds for rural development.

I prepared a room with tiles, sink, and windows with nets. I asked the opinion of the competent Azienda Sanitaria Locale (Local Health Unit) *and I heard that many more things were needed: a project signed by a surveyor, tiles on the walls up to 2 meters, authorization for the discharges, water analysis. After the construction works, I discovered that the room was 5 cm lower than the standard, and that the water in my dwell had to be analyzed twice a year - with each analysis costing 600 €. ..*

Many of the readers will marvel at this list of simple formal obligations, but they are exactly the long lists of formal EU obligations to which it must submit "any farm", designed for large economic size farms, applied to small peasant farms do not allow them - ultimately - to produce. In fact, the obligations which must be subjected to avail

of EU support are those contributing to the fragility of the farms of small size, blocking their development and condemning them to the agony.

That same year we had the opportunity to apply for the construction or rehabilitation of rooms/labs and so...we had to make a new application (for CAP support)*. This time as well, the money allocated arrived after 4 years and the work could go ahead only thanks to my job at the dentist office. We also used money from my husband's job and my mother's retirement bonus, in addition to bank loans (which were not subsidized). But we went ahead.*

The investment needed to start a new business that can give economic stability to the peasant farm is almost entirely made outside the agricultural sector itself. The farmers invest with income from off-farm work and their family's savings. This makes them - by far - the most important investors in agricultural and food production.[40]. It is a lesson for those who wonder what investments are needed for peasant family farming.

In 2003 I had the second child; the first was 3 years old. I was proud of breastfeeding my children, but I was also tired and demoralized. Meanwhile, with much effort, the workof the shed and the construction of new laboratory were moving forward. In the project, we included the construction of four rooms to be used for hospitality, our old project. In 2008, taking advantage of another application, finally we became an "agritourism" with 3 bedrooms.

5.3. Peasant agriculture meets public policies

The State becomes an obstacle and public policies become a burden rather than a resource when they are design to support just one model of production: large scale commercial farming. The impossibility - in fact - to have access to public funds in support of agriculture, and the obligation to abide by the same laws and rules defined on the basis of ability and needs of large size farms end up creating a dangerous process of exposure debt - especially in years

40 CFS – "*Principles for Responsible Investment in Agriculture and Food Systems* ", para 5 -

of economic crisis - which can carry a small family farm to the final collapse.

My life had become very intense and difficult. Loans and debts with suppliers ruled my life: no holidays, nothing superfluous. Just a lot of work: my daughters, my job at the dentist (3 days per week), the bees, the vineyard, the hazelnuts, the vegetable garden, cleaning the house, my mother and my in-laws that needed to be accompanied to doctors etc. Not to mention bureaucracy. Every day I had to take care of the farm and the agritourism's accounting, which had to be maintained through two different registries in addition to the registry for organic certification of cultivation and the bees. I also had to take care of the tractors documentation, insurance, the surveyor, and the documents for the municipality. There was always a fee that had to be paid. And, at the end my agritourism received no public funding!

Increasing the labor intensity of the whole family, narrowing to a minimum the compensation of their work and to their well-being, continuously introducing innovation and diversification of sources of farm income and - if necessary - extra-farm, peasant family farming resists. With "*some satisfaction*".

But there were also some satisfactions. We did not stop. We purchased the land adjacent to ours, and we reached 5 hectares of land with 2 rented properties in Monasterio: 5 hectares of farmland and 5 of forest in Roccaverano (the village of my husband in a near mountainous area).

It's 2014 and the funding I had applied for, although approved, has not yet arrived.

5.4. *I'm a farmer!*

The human, personal, intimate dimension of the work with the earth emerges strongly through the choices that Maria Paola has done during her life. Her path, however, is not only an individual path, but it is the path of tens of millions of small farmers in Europe, it is the collective path of a specific way to produce food, that of peasant agriculture. A production system that intimately binds lifestyle and farming activities carried out directly in a socially and environmentally sustainable way -where the strength and success of a person is only

a symbol of a larger collective and inclusive process.

When I think about how much I wanted to leave this village, I think of the hard work that all those who live here had to do in order to stay here. And I think of the luck they have today. I feel lucky because I have a job that I like, I exercise without having to go to the gym, I sunbathe without having to sit on a beach chair, I eat good food, breath clean air, I do not fill the world with garbage, I make my guests aware by saying that what they eat has been produced by someone like me who loves her work.

And of a small farmer like me there are many. So many that we allow my village, province, region, and why not, my country to continue to live, to produce and cultivate the land, to take care of children and elders."

6. Political recommendation.

The role of effective public policies is key, including the following:

a) Recognize the richness of the diversity of agriculture as the foundation of differentiated public agricultural policies;

b) Recognize the characteristics of the different peasant farming systems;

c) Recognize the multiplicity of functions performed by the peasant farming through the organic integration of environmental, social and economic measures in support of this multiplicity;

d) Enhance the link between peasant economy and territory;

e) Reform the land government system and facilitate access to land for farmers in order to facilitate intergenerational transmission, limiting the concentration of land and supporting the enlargement of the small size peasant farms,

f) Ensure the right of access to land to install new farms, especially for the young generation;

g) Maintain public ownership of land owned by municipalities, provinces, regions or state and promote the use by program targeting it to peasant agriculture;

h) Support collective action, co-operatives and associations, for the development of new experience, in particular in the areas of

solidarity economy;

i) Facilitate the rules for access to and control of the local market, regional and, where possible, national level by the peasant farms through specific and exclusive measures to regulate and promote access to market of the products from peasant economy;

j) Protect land use and the countryside, as a territory not included in the urban-industrial areas, where agricultural activities are the priority and dominant component, giving a specific support to safeguard peasant family farm survival.

Associazione Rurale Italiana could not draw better conclusions than the ones offered by Maria Paola: *"..to my daughters I hope to pass on the passion, the bond with the land, the only way that man has to survive. I want to teach them to do so without forgetting who they are, and while expecting to be recognized for their work. It does not matter whether you have 5, 10, 20 hectares of land; peasants are the ones who work the land, that respect it. I often feel small and powerless, but I do not feel alone. [Maria Paola Ceretti]*

Peasant Agriculture, Seed Autonomy and Peasant Management of Crop Biodiversity in Senegal[41]

Introduction: situation and challenges of peasant farming in Senegal

In Senegal, almost all Senegalese farmers practise peasant and family farming. It feeds up to 60% of the urban and rural population, in a country where the rural world still represents over 55% of the population. This type of agriculture contributes to 55% of GDP in the primary sector, and is a source of employment and income for approximately 60% of Senegalese (IPAR 2009). After over 30 years of neoliberal policies and the climate change suffered in the region

41 Contribution of the Senegalese Association of Peasant Seed Producers

since the 1970s, as well as the failure of several governmental initiatives, these figures show how resilient family farming can be in the wake of constant economic, institutional and bioclimatic crises. In order to survive and fend for themselves, peasants have had to diversify their production; develop non-agricultural activities in rural areas, recur to seasonal migration, migrate to urban areas or to other countries, and finally, get organised in order to be able to produce at a local and national level. (Sall & al., 2010).

These adaptations prove to be limited and uncertain. Family farming is a "*strangled*" type of agriculture (Jan Douwe *Van Der Ploeg,* 2008). The climate in this country is Sahel-Sudanese and agriculture is mainly rain-fed (less than two percent of harvested areas are irrigated). The country still bears the scars from colonial specialisation and from the types of crops that have eroded soil fertility. Additionally, over the last fifty years the country has suffered a significant widespread decline in rainfall over the length of two to three months, and therefore peasants find themselves in a precarious situation. Many peasants (20% to 50%, depending on the region) suffer from recurring food insecurity problems. Moreover, these peasants have to face strong competition from developed countries, encouraged by the Marrakesh 1994 Agreement on free trade. In addition, since the 2008 crisis there has been a growing tendency towards land grabbing by powerful economic actors, blocking peasants from having access to land. [42] Hence peasants are turning away from agriculture and migrating to urban areas, and young people are emigrating.

1. Peasant Farming in the face of transition

Today, the State still focuses on agribusiness and the priority seems to be placed on the green revolution led by NEPAD[43]. This project of conventional agricultural modernisation, which receives significant financial support from private foundations[44], ignores past failures and can hardly meet the challenges that agriculture faces in Senegal: to diversify and feed the country[45], to provide employment to young people and to reduce poverty, while rebalancing the rural areas and preserving natural resources and biodiversity.

42 Cultivated land surface per individual went from one hectare to half a hectare between 1960 and 1998. See Ministry of Agriculture Statistics

43 *New Partnership for Africa's Development*

44 These foundations are sometimes directly linked to seed or agrochemical companies

45 Senegal is the most dependent country per capita (12 million) on West Africa's food plan

However, local initiatives that are in search of another path are thriving across the country.

The purpose of this study is to highlight those practices that particularly defend seed autonomy serving peasant family farming and changes in production modes that are adopting an agroecological approach.

Agroecology starts in the fields, and seeks to "enhance agricultural practices by imitating natural processes, thus creating beneficial biological interactions and synergies among components of the agro-ecosystem. It provides the most favourable soil conditions for plant growth, particularly by managing organic matter and by raising soil biotic activity." (De Schutter, 2010)[46]. It draws on the experience and knowledge of peasant farmers, but also values the achievements of science.

These practices, which actually return to and readapt old farming practices that were left aside by modernisation and are partially forgotten or devalued nowadays, are not merely limited to plots of land: agroecology can also be applied to rural areas, promoting changes in processing methods (local and peasant food processing) as well as distribution and consumption patterns (shorter circuits).

Agroecology underscores the inseparability of social and ecological systems and therefore also has socio-economic and cultural dimensions. It is part of a real social movement, and has an identity (re-appropriation of old techniques and consumption patterns) and policies (peasants' rights, food sovereignty, etc.)

In Senegal, peasant agriculture has taken steps towards agroecology, thus radically breaking away from the developments of recent decades. Yet those who undertake these practices use up resources and take risks (experiments, trial and error approach), hence agroecology can only be consolidated and disseminated in the medium to long term. In the short run therefore, there is no real full inventory of agroecological practices on the ground, but rather a series of dispersed innovative initiatives that are on the increase, and that complement each other and become consolidated in the form of individual and collective incentives.

46 The core principles of agroecology are: (i) Maximise the potential of crop ecosystems in capturing external natural resources; (ii) Utilise interrelations and internal flows of crop ecosystems (iii) Reproduce the productive potential of the crop ecosystem, notably organic and mineral soil fertility and biodiversity; (iv) diversity of species, genetic resources and agro-ecosystems in space and time. (De Schutter, 2010, SOS Faim, 2011 ; ASPSP, 2014)

1.1 A peasant agroecological production

The pioneers of agroecology are a handful of peasants who have been to school, along with a few urban dwellers or sons and/or daughters of peasants who have been to university and have now turned to agriculture. As of the 1980s, these intellectuals questioned the conventional model of intensive agriculture, which used chemical external inputs. At some points in their lives they have either bought and/or established their own farm, where they have then implemented and demonstrated other practices. Their knowledge and know-how in agroecology has deepened throughout their exchanges and international peer-to-peer training, as well as through their travels and their own experience. They have often received solid support from two NGOs, which are also pioneers in agroecology in Senegal, namely ENDA-Pronat and Agrecole Afrique. These NGOs are present in all four corners of the country, and six of their members founded a small structure known as PRABIOC ("Praticien Bio Conseil"), after having received training in France in the mid-90s. This enabled them to support each other, given that they still hold minor positions.

These farms are mainly made up of 1 to 2 hectares of irrigated land, which is fenced and equipped with an irrigation system connected to a well or borehole. Crops can be grown during the rainy season as well as irrigated crops in the dry season[47]. They are locally known as *gardens* or *oasis*, such is the diversity of the agricultural system, and they look like a real oasis in the middle of surrounding desert land. Below, Box 1 summarizes the wide range of agroecological practices that can be found.

Box 1. Some local agroecological practices

- Wide diversity of crops and varieties
- Use of compost
- Techniques for saving water and soil conservation (small dykes, mulching…)
- Irrigated crops during the dry season (wide range of vegetables, etc.) and other crops during the rainy season
- Introduction of trees by means of planting or assisted natural

47 Irrigation on small plots which are watered by means of wells or boreholes has become widespread in Senegal following chronic drought over the last decades, thus allowing for dry season market gardening to complement raining season crops (rain-fed crops, flood-recession farming in the lowlands). Nevertheless, in areas where the water table is too deep, wells are mainly used for drinking water, while irrigation is limited to small home gardens due to the high cost of water.

regeneration (ANR) for orchards, agro-forestry systems, hedgerows, hedging techniques, or small "medicinal forests"

- Agriculture and livestock association (for example Leucaena can provide animal fodder, fix nitrogen and slow down soil erosion in the millet fields and vegetable gardens)
- Seed production
- Use of bio-pesticides (for example nematodes for fighting against parasites)
- Use of intercropping
- Restoring overexploited land (for example with Andropogon and euphorbias…)
- System of Rice Intensification (SRI) with seedlings from the nursery instead of direct sowing

These practices have spread across the surroundings to a greater or lesser extent. They are particularly present in the areas set up by women's groups or peasant associations (mixed), under the leadership of and supported by pioneer farmers. They can also be found in *home gardens* (small surfaces on the edges of concessions where women practise market gardening, more often during the rainy season rather than during the dry season, due to lack of water) and in certain areas cultivated by men during the rainy season.

A progressive and often considerable investment is needed in order to apply agroecological methods. The goal is to transform the agro-ecosystem and recover its fertility and its potential, which is why the changes do not necessarily really stand out for passers-by. Not all practices are adopted, for example, manure is used for fertilising, but not composting; produce is grown using agroecology, but there is little diversity; the fields on the edge are irrigated, but not the fields used for the rainy season, etc. Some relief support is often needed, especially in those areas where it is harder to access water. The level of equipment in families and groups (carts, animal traction, small tools, even a motor and pump) and the degree of vulnerability often determines their ability to use techniques that often require a greater investment in terms of work. Lastly, in order to better incorporate youth in these initiatives, farm schools have been set up, such as the Ndiemane Agroecology Training Centre (see Box 2 below).

Box 2. Background to Agroecology farms

- **Lamine Biaye's farm** (*Djimini, Velingara, Haute Casamance*). Ten years ago, Lamine Biaye, a figure in agroecology in Senegal and founder and chairman of the ASPSP, decided to settle down in the "fouladou" region (sedentary Fulanis), given the access to the water table and to the Velingara crossroads. He set up a farm school modestly named "Biolopin". It covers an area of 15 hectares, from which 1,5 hectares are fenced and irrigated and include "boards" for growing diversified vegetables during the dry season, "hedges" made up of several tree and bush species, which have varied uses (medicinal, firewood, commercial fruits such as cashew nuts etc.), compost heaps, and a stable for a yoke of oxen. Common vegetables and cereals are mostly grown: okra, maize, fonio, rice, tomatoes, peppers, lettuces, beetroots, aubergines, soya, cucumber, hibiscus, sesame, squash, cowpeas, cassava, beans, lemongrass, sweet potatoes, fruit trees (cashew trees, mango trees, lemon trees, guava trees, mauringa and leucena plants, tamarind trees, eucalyptus trees, baobab trees, etc.) Biolopin aims to be a fully equipped training centre with the infrastructure needed to host those people who are interested in all subjects related to agroecology, agro-diversity and local development on a human scale that can be replicated. Information is already being disseminated through educational sessions at the village school, and following the creation of the first women's group, bringing together about forty women from the village of Djimini. The women have managed to get hold of a field and a well, despite the men's reluctance. Two new women's groups are currently being created in nearby villages Demba Yara and Samba Saratala.

- **« Greening the Sahel » : Agroecology Centre in Ndiemane (Mbour).** This training centre is currently managed by the AFAFA (*Aide aux Forces Vives Africaines pour la Formation à l'Ecologie*) Association and El Hadji's old farm. El Hadji, a graduate of Dakar University, co-founded the Association of Naturalist Farmers in Senegal AGRINAT (*Association des Agriculteurs Naturalistes du Sénégal*) in 1986, in order to promote organic farming and to raise awareness on the danger of pesticides. Upon his return from Montpellier (France) where he studied tropical agroecology, he chose to settle down on the "Petite Cote" Coast, south of Dakar, with the goal of making a living from growing food, while disseminating agroecological practices in this region of sandy soil that is prone to erosion. In 2006, the AFAFA Association took over the management of the centre, following the death of El Hadji, and since then has helped to dig wells and set up 200 oasis-farms, with the support

of the Terre & Humanisme (France) network. This has encouraged other farmers to do the same using their own means. The rapid growth of these small vegetable patches centred on commercially growing onions during the dry season, could ultimately affect the level of the water table and salinize the ground. AFAFA has set up a device in order to assist farmers during the ecological transition.

1.2 The peasant economy and nearby rural and urban areas

The adoption and dissemination of agroecological techniques is part of a larger initiative undertaken in the context of peasant associations and collectives.

The diversification of species and varieties not only leads to better agro-ecosystems, it also enables families to have a more balanced diet and allows local people to have more access to diversified and quality produce (local markets, short circuits), while also increasing the remuneration of peasant workers. As confirmed by a farmer from Ndiemane, who was preparing to take his produce to the weekly market in the main village nearby his rural community (Nguenien): "*Our onions can be kept for a year. The other onions* (imported from the Netherlands) *rot. Everyone knows now what our onions are; they are agroecological, last longer and taste better.*" Another example is millet, which is gaining ground on peasant's fields and in the diet of the urban and rural poor (eaten like porridge or couscous), in a national context where the main cereals, over time, have become partly or entirely imported rice and wheat. Farmers Associations are seeking to set up agrifood processing and commercialisation units, i.e. individual micro-companies or units managed by groups, including product packaging, roasting cashew nuts, rice husking and parboiling, processing of fonio, oil refinery, processing of fruits and vegetables etc. They use local markets and occasionally the international market, as is the case of fonio produced by the Yakaar Niani-Wulli producers' federation, based in Koussanar (eastern part of the Groundnut Basin area), which is active in international fair trade circuits.

Sometimes, the organisation aims to find solutions to the hunger gap problem and food insecurity in large sections of the village. Elsewhere, peasant associations organise collective actions for access to and defence of land. They are getting organised in order to contribute to the preservation of agricultural land. One example is the Nill Jams association, based in Fandene, which is facing up to the threat of urban expansion of Thies over their land. Another example is their attempt at convincing rural councils[48] to grant the right to occupy land to groups in order to develop irrigated plots of land.

The most dynamic organisation are groups that have managed to build ties in a smart way with other actors beyond their village (State, NGOs, donors)[49] and to skilfully mobilise different social groups in

48 Local Authorities that have the power to allocate agricultural land

49 Who are allowed to access external resources and support, but not too little and not too much either.

the villages (women and men, young and old, founding lineages etc.) while managing to keep internal disagreements and personal rivalries at bay (Cissokho, 2008) These internal dynamics favour a gradual and solid anchoring of agroecology on the ground, even if one of the main ongoing challenges is the inclusion of youth in these new projects. Box 3 gives examples of local initiatives.

Box 3. Initiatives of 2 agroecology groups

- **Union of Ecological Committees of the Mininke Valley (UCEM)**, in Koungheul (Centre-East Senegal, Kaffrine region), in the heart of the groundnut basin. The association was founded in 1998 and works together with 30 villages (Mandinka, Wolof and Fulani) on several activities (food gaps and food security, literacy in Mandinka and Wolof, agriculture, etc.) Together with the help of local leaders, the UCEM works on improving overexploited land from growing peanuts by recurring to assisted natural regeneration (ANR). They also experiment with new techniques for recovering non-productive land, and disseminate agroecology methods in the collective irrigated plots and home gardens of certain villages. In 2010, UCEM made itself known following a mobilisation to stop a French company from opening an inputs store (selling pesticides, fertilizers and seeds) in Kounghel, and then conducting tests with local large farmers. They organised workshops in order to raise awareness on the risks linked to the introduction of hybrid seeds, GMOs and chemical products.

- **The Union of Local Communities of Tattaguine (UCT)** (Fatik region). UCT was founded in 1992 but does not really have headquarters like other associations of its size, and its members are families rather than individuals. The association is characterised by a variety of "little things". It manages a savings bank; promotes the set up of organic family oases by granting sink credits and agroecological practices; assists oasis-farm owners in commercialising their produce and encourages the creation of local markets. It also recently created a farm school where young pupils can train for a period of one year.

2. Agricultural biodiversity and collective action

In order to underscore the inextricable link between agroecology and agrobiodiversity, the need for concerted action between the different actors has become increasingly evident, especially among those

peasants that wish to increase their control over the management of appropriate seed supply.

2.1 A network of local peasants and associations defend peasant seed autonomy

Among the pioneers in agroecology mentioned above, we also find the founders of the Senegalese Association of Peasant Seed Producers (ASPSP). They have always produced peasant seeds, but following a series of training sessions and meetings on peasant seeds and GMOs with their European peers in the 2000s, they were inspired to join forces and take action. In 2003, they created their own ASPSP structure, a national organisation that brings together 15 associations and local peasant federations.

ASPSP's strategies are based on the diagnosis that erosion of local varieties is an old phenomenon, which has phased out a wide range of varieties with desirable characteristics. Besides from being resistance to drought, to disease and to parasites, local varieties are well adapted to local environmental conditions (soil, rainfall etc.). They are not very demanding in terms of inputs and they taste good. Historically, each area of peasant land had its own range of varieties. Farmers harvested their own seed from their fields, selecting the best ears of corn, tassels or pods (in mass selection) and preserved them until the following season. Each family tried to ensure its own seed supply, and if they ran out unexpectedly or if their stocks were poorly stored, they would have to exchange goods (donations or purchases) among family members or neighbours, who ensured there was access to seeds. These practices continue to be alive today, however, peasant economies have been weakened thus leading to a diminished capacity to produce seeds oneself, either due to loss of know-how, or by becoming accustomed to buying them every year. Moreover, there has been an invasion of certified seeds linked to the new Green Revolution for Africa. Farmers pay high prices for these so-called improved seeds, that come in standardised varieties from the formal or state seeds system[50], but they are not always adapted to their needs. "*Improved varieties are not always the best*", as formally stated by a West African peasant delegation evaluating participatory breeding research programmes (BEDE, 2009). Patented GMOs are just an extension of hybrid varieties, which cannot be replanted. What is worse, they can have detrimental effects on the peasant seed

50 Inspired on the French model, specialised in seed production and distribution

system. One example is hybrid maize, which was introduced by a public programme and widely distributed by USAID in Senegal[51]. This *dent* corn[52], which is used as animal feed in the USA, has caused the degeneration of existing varieties by pollinating local corn. *Dent* corn was widely distributed following pressure from the State technical services, despite the fact that consumers dislike its taste.

The ASPSP therefore seeks to build on these historical practices and ancestral know-how, combined with modern agroecological practices, in order to mobilise peasants to preserve local and traditional varieties and thus contribute to seed autonomy. The aim is for peasants to become autonomous and independent in terms of diverse seeds that are adapted to their context, by gathering knowledge from the elders, exchanging between peasants and mastering seed production and conservation. This is then linked up to intensive advocacy around seed policies that favour food sovereignty and are free from the current legal and regulatory shackles.

2.2 Exchange and seed fairs shape the expansion of peasant networks

The path taken by ASPSP's (for merely 11 years) has been marked by successive meetings with Senegalese farmers, and between Senegalese farmers and their peers from West Africa (Mali, Togo, Benin, Burkina Faso, Niger) and Europe (France, Switzerland, Germany). Farmers have exchanged seeds during their tours and training sessions as well as during seed fairs, thus gradually shaping the expansion of networks and other major activities led by ASPSP (see Box 4).

Box 4. Peasant seed fairs promoted by ASPSP

- Background and goals behind the fairs. The founders exchanged seeds informally between themselves. During the first fair in 2007, the exchange of seeds took off significantly. The ASPSP decided to repeat their success through more fairs. These fairs allow them to: 1) offer opportunities to exchange knowledge, experiences and

51 REPORT FROM A TRIP TO MALI BY FARMERS TO EXCHANGE - Biodiversity, peasant seeds and GMOs, 23 January to 13 February 2004 - http://www.bede-asso.org/lang/fr/nos_actions/semences/sahel/BEDE-LIVRET-MALI-WEB.pdf and "Bilan de la recherche agricole et agroalimentaire au Sénégal" 2005. CIRAD

52 https://www.kws.fr/go/id/drxj/

old seed varieties as well as new varieties sown by peasants; 2) to identify areas and communities that are rich in biodiversity and identify and locate their guardians and understand their motivation for preserving this wide diversity; iv) strengthen links between participating organisations and build networks.

- West-African fairs in Djimini (*Velingara, Kolda Region, Upper Casamance*) Fairs are organised every two years, and have a unifying theme: rice in 2009, granaries in 2011, and in 2014 it was "Millet feeds Africa".
- Local and Regional fairs. The exchange of seeds had almost been lost in villages, but seed fairs, as events that mobilise peasants, gave the practice the place it deserves. Groups of peasants from nearby areas, from the region, and from neighbouring regions are invited to come and exchange their seeds. At the Fandene fair (in 2011), a peasant showed a few handfuls of some seeds still miraculously in his possession, thus bringing back a variety that was believed to be extinct (purple millet), and then becoming a symbol of a movement to take ownership of the collective seed heritage.

There has been a gradual expansion of the initial core practitioners of agroecology, who have invested in the issue of peasant seeds. This expansion of networks and local alliances has resulted in new groups and territories that work on seed autonomy, thus consolidating the presence of ASPSP across the country.

The composition of ASPSP is disparate. There are members from all four corners of the country, of varying backgrounds and trajectories. There are member organisations in the Groundnut Basin ("*Union des groupements de producteurs*" in Mékhé, "*Nill Jams*" Association in Fandene, "*AFAFA*" Association in Yungar, "*Union des Collectivité Locales*" in Tattaguine etc.); from the vegetable- and rice-growing areas in the middle valley of the Senegal river ("*Fédération Ngatamaaré Toro de Guédé*", "*Tim Timol*" Association, etc.); west Senegal ("*Fédération des producteurs Yakaar Niani-Wulli*" in Koussanar and "UCEM" in Kougheul, etc.); in Casamance ("*FAEK*", "*AJAC K.*", "*Biolopin*" Farm, "*Entente de Diouloulou*", "*GIE Baragnini*", etc.).

Most member organisations are local peasant associations that bring together a few hundred members from two or three-dozen villages within a same territory, along with some individual farms, women's groups, as well as some larger federations with several thousand members. Moreover, some of these associations are closely linked

to national or international NGOs or public programmes. In certain cases, we face a real *cemetery of projects*, whereas in others, associations are more independent as they are either far away from the larger development project circuits or because their external partnerships are more balanced. Lastly, while some associations are collectively engaged in the agroecological production of seeds, others are involved through some of their individual members who struggle to get through school, despite their great know-how.

ASPSP functions like a network for farmers to exchange seeds and knowledge, while marginally involving some institutional actors (such as NGOs, researchers, foreign partners and donors). The network does not follow a hierarchy, and is characterised by a few focal points; i.e. peasants who are particularly active on this issue and experienced in seed production.

The network stretches beyond the borders of Senegal, as can be seen by the fact that ASPSP members are focal points for the Senegalese branch of COPAGEN, the Coalition for the Protection of African Genetic Heritage, and that ASPSP coordinates the West African of Peasant Seeds (COASP), founded in 2011 at the Djimini Forum (Ndiaye, 2011). Moreover, ASPSP has forged alliances with peasant seed producer networks from other regions in the world, notably in Europe.[53]

3. Peasant Farming and seed autonomy. Achievements and Challenges

3.1 Three examples of peasant farming gaining control over its seeds

Below, we delve into the subject matter at hand and present three experiences on the ground, which illustrate the role played by seeds in developing peasant farming.

a) Gaining control over old crop varieties (millet, rice, maize)

Finding old varieties, multiplying them and circulating them in order to ensure their survival and their use in different regions often depends on luck, and on long and patient work. One same species can sometimes be called differently from one region to another. Sometimes, the same name is used for different varieties. Homonyms and synonyms can be explained by the fact that varieties

53 With the French Peasant Seed Network, Rete Semi Rural in Italy, and more widely, with the European Coordination "Libérons la Diversité", as well as the Indian Network of Millet in Asia, supported by the Deccan Development Society.

are designated either by a qualifier adjective, which qualifies the grain or the appearance of the plant or its cycle, by the name of the introducer, or by the place of origin (Pélissier, 1986). Moreover, cross-pollinated plants[54], such as millet and maize, imply certain specific constraints, as seed production has to comply with adequate isolation, distances, and a sufficient amount of grain is needed in order to compose a sample of the mother seed. Lastly, the heritage value given to seeds is sometimes so high, that some families that own rare seeds are reluctant to multiply and circulate them as they would rather keep them as family relics. These conditions allow for seeds to once again be circulated; yet trust is the cornerstone of any exchange of seeds and guarantee of quality. Lamine Biaye, chairman of ASPSP, often reminds us "seeds are cultural and part of culture".

ASPSP and its member organisations have worked on the recovery of two old food crop varieties: rice and millet. Rice is a cereal that has grown in terms of consumption in Senegal, but rice seeds also have a significant symbolic value, as can be seen from its use to mark milestones in life (birth, marriage, death). Today, there are several dozens of Nerica varieties (cross between African rice Oryza glaberrima and Asian rice Oryza Sativa), produced by the African Centre for Rice and presented to rice farmers. Meanwhile, the long tradition of rice farming in Casamance has led to several varieties that are adapted to local conditions and require few chemical inputs. In Basse Casamance, local peasants are known for their exceptional mastery of rice and the environments in which they grow it, as they easily distinguish African rice (old or "Diola" rice) from rice that was imported by the Portuguese explorers and Mandinka traders.

Box 5. Women regain mastery over their old local rice varieties

- "Women have stood up". These two slogans "*women guardians of seeds*" and "*let's grow our own seeds*", form the backdrop of ASPSP's support to women's groups[55] in the rural communities of Saré Bidji and Pata in Northern Kolda (Middle Casamance), or linked to the cooperation with Diouloulou in Bignoni (Lower Casamance). By means of a test of 6 local rice varieties (upland and lowland varieties), "traditional" crop systems were compared to "modern" conventional productions. The test results undoubtedly favoured

54 Cross-pollinated plants reproduce mainly by cross-fertilization, during which a flower is pollinated with the polle from another plant.

55 These groups are themselves accompanied by the Newfields Foundation, through NGOs FODDE (Forum for Sustainable and Endogenous Development) or CASADES (Committee Support and Support to Economic and Social Development of the regions of Ziguinchor and Kolda).

traditional varieties. Whereas State civil servants encourage farmers to use improved varieties, women's groups, backed by ASPSP have managed to regain control over their varieties. They were introduced to the principles of agroecology and in 2013 they multiplied some seed varieties that are of great interest to them (taste, resistance to drought, cycle time, etc.)

Growing millet is also part of the challenge faced by peasants who seek to diversify production and ensure food security for the poorest. The term millet comprises pearl millet, sorghum and other varieties of millet, and sometimes fonio. A 2012 census identified 21 varieties of millet and 24 varieties of sorghum (ASPSP 2014). Finding old varieties, especially short cycle varieties, is pivotal in all regions of the former groundnut basin, where crop diversification from the last 20 years has been affected by climate change in the Sahel-Sudanese region, leading to the disappearance of late millet and the deterioration of sorghum. There is now more demand for early millet and short cycle millet varieties that used to be grown.

Box 6 "Millet feeds Senegal"

- **Extinct varieties are re-found.** That is the result of the dynamic exchange of seeds developed by ASPSP. The following are some examples: i) purple millet (this type of millet presents additional advantages, as birds can't see the seeds due to the morphology of the seed coat, and thus don't eat them). A peasant who owned a few purple millet seeds attended one of the seed fairs. ii) *Thialaw* millet (tall variety, with millet ears that grow up to 60 cm, and long cycle small seeds). This millet used to be grown in the west of the groundnut basin, and has now been re-sown thanks to the supply of some seeds from some peasants living 300 km away.

- **Multiplication of seeds to restore variety** Peasants and collectives of seed producers (see Box 7) work out of their own good will to breed seeds. However, all it takes is one bad year to wipe out their efforts if all eggs are put in one basket; it makes more sense to reduce the risks by handing over the responsibility to at least two farmers (focal points), in charge of seed multiplication.

For all these food crops, preservation of seeds from one year to the next is at stake, thus pushing ASPSP to engage in a spectacular operation involving granaries for storing harvested crops (See Box 7).

Box 7. Granaries for storing harvested crops and seeds until the following year

- **Ineffective storing methods.** Following the period during which large public warehouses were built for storing seeds between 1950 and 1970, families abandoned old family granaries, as they were deemed archaic, and thus lost the know-how. Today, seeds are stored in simple huts (sometimes known as storage huts) on the same plot; or in barrels or plastic drums recycled for this purpose, or simple sacs. Maize ears are traditionally hung from trees on the plot, thus benefitting from the kitchen fumes that repel any potential insect attack. These storage conditions are not the best, and rat attacks or water leaking through damaged roofs often destroy the quality of seeds.

- **ASPSP promotes traditional family granaries.** Having identified those who still hold the know-how for building granaries, which was shown during a demonstration of Bo, Mandinka and Balante (ASPSP/BEDE, 2011) granaries at the Third Djimini Fair in 2011, training sessions have been organised in order to disseminate this knowledge in the villages of ASPSP members. The granaries offer several advantages, including the use of local materials, ingenuity and utility for preserving seeds for the following year, even if they do not solve unforeseen problems (need for food or cash), which too often lead to depleted stocks and to the risk of not having any seeds left for the rainy season. They are a symbol, and a flagship for the associations that promote them.

b) Ensuring quality seeds for vegetable crops: "Galmi purple onion operation"

Senegalese peasants appreciate the qualities of the Galmi purple onion (how long it keeps, for example), and grow them for both their own consumption and for sale locally, despite the unfair competition they often face from Dutch onions, which flood the markets. In 2009, at the international fair on peasant seeds in Djimini (Senegal) the BEDE Association revealed that a seed company known Tropicasem had applied for a Proprietary Variety Certificate (PVC) for the "Galmi Purple Onion", bred in Niger. West Africans condemned this move and peasants gathered in Djimini took it as a warning of how their rights over seeds can be threatened by industrialised countries. (Bede & ASPSP, 2011).

A programme was launched by ASPSP in order to develop know how on seeds[56]. A Train the Trainers session focusing on the Galmi onion seed production was organised for its members, backed by the results from research undertaken by the National Higher Institution for Agriculture in Thies. Results are convincing. Seed production on small surfaces (a few boards on irrigated plots) can be extended if conducted rigorously. Seeds produced since 2014 soon circulated, both locally and among ASPSP members, thus appropriately replacing those seeds purchased commercially, which were defect in terms of germination, as is often the case.

The Galmi onion seed production was particularly profitable in the context of a strong national demand and raised two questions at the ASPSP: should the ethical rule of free exchange of seeds be relaxed in the case of seeds similar to the purple onion, and in that case what rules should be implemented in order to avoid "misconduct"? In a regulatory framework, in which seeds on sale need to be certified by the public seed service, where does the sale of seeds fall into, if they become an act of civil disobedience?

c) Towards "seed huts", tool and symbol of peasant seed autonomy and of peasant management of biodiversity

After a first stage centred on the recovery of varieties and lost know-how, as can be seen for instance from the catalogue of varieties identified by ASPSP (APSPS, 2008), or from the building of storage granaries, efforts are now turning towards devising and implementing the measures needed for producing and preserving peasant seeds at a national level. The goal is to achieve long-term, secure management of Senegal's biodiversity and crop seed heritage, along with similar efforts in neighbouring countries.

Seeds need to be sown (planted) every year, or every two to three years, depending on the crop. A clear separation needs to be made between seeds for the following year, and seeds that are to be preserved. Above all, it is essential to share out the necessary tasks for the upkeep of seed heritage among farmers and groups, within the different social and agroecological frameworks of each country. Who is responsible for sowing and multiplying such or such a variety? Lastly, physical spaces are needed in order to store and preserve the seeds. These so-called "seed huts" are a type of collective

56 With the support of Avec Ousmane Sinaré, a seed farmer from Mali, member of "l'Union Régionale des Coopératives Agricoles de Kayes" (URCAK), who attended training sessions

granary for any given set of plots or farms, where seeds are stored for long-term preservation; they are the equivalent to community "seed banks"(Gaudin, 2011). They are linked up to a database that identifies and describes all local varieties, its status (date from crop, responsibilities, etc.) and there is a constant follow-up. ASPSP has chosen to adhere to this project, which implies a significant challenge in terms of organisation and requires formalisation and rigour, while having to coordinate mobilisations and exchanges, and investing much effort into training peasants on seed production, and working jointly with researchers. Box 8 describes two initiatives, among others, that are part of this process.

Box 8. Two experiences on ways of organising around seed autonomy

- **In Guede, on the edge of the River Senegal, the Tim Timol Association** was founded in 2002 and brings together about fifty women seed producers, following some training backed by ENDA-Pronat. Each producer produces one single type of crop and single variety of seed, in order to respect the rules of distance and isolation, particularly for cross-pollinated plants. They handle either maize or sorghum, on relatively large plots, or vegetables on smaller plots: *okra* (2 varieties), *diakhatour* (2 varieties), hibiscus, squash (several varieties), courgettes, pumpkins (several varieties), tomato (Palet varieties), as well as other varieties received from France. Seed germination tests are conducted on older seeds. The women producers are supported and supervised by two expert farmers from ASPSP.

- **In Djimini future "seed huts" for Upper and Middle Casamance** are taking shape thanks to the activities of several groups now divided into two centres, which are closely linked to their common history: on the one hand the Baragnini Association of Medina Wandifa (*Boukiling Department, Sédhiou*) and other groups from nearby villages, namely Kandiadiou, which is noteworthy because of its age-old market gardening; and on the other hand Biolopin at Djimini and its "green shoots", the GIE Tessito and two new groups (See Box 1). In each centre, seeds from vegetable crops and cereals have been placed in small glass jars, duly labelled, and placed on shelves in a protected area. This meticulous work symbolises the first steps taken by the organisation towards managing seed heritage; the hut that contains one of these two collections has already been baptised the "seed hut", with the will

to see this project materialise and increase in visibility. In the short term, those farmers that have not received any training need to be trained, and seed multiplication needs to be shared among farmers and groups/villages, while continuing to define each variety.

3.2 Actions for advocating peasant seed systems and a change in public policies

ASPSP is continuously advocating seed policies that favour food sovereignty, i.e. they aspire for family farming to be able to provide sufficient healthy food for all communities and across Senegal. While public policies are still based on the national seed system, ASPSP highlights the value and advantages of peasant seeds.

The association defends its proposals with growing legitimacy at umbrella organisations it belongs to, such as the National Federation of Organic Agriculture (FNAB), the Federation of Senegalese NGOs (FONGS[57]) and the National Council of Rural Dialogue and Cooperation (CNCR). It also takes its struggle to the National Committee on Biosecurity, a technical advisory body set up by the Biosecurity Act (2009), which is attempting to legally import GMO seeds and GMO food products.

Lastly, the association is highly active at public institutions, especially research institutions, but also at the FAO, in order to defend farmers' rights to preserve, produce, exchange and sell peasant seeds of local varieties with the Framework of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), as can be seen in Box 9.

Box 9. Statement (Extract) by participants of the 4th edition of the West African Fair of Peasant Seeds in Djimini, March 2014

At the 4th edition of the West African Fair of Peasant Seeds that was held in Djimini, Senegal, from the 11th until the 13th of March 2014, 350 participants, 54 delegation from Benin, Burkina Faso, Gambia, Niger, Mali, Togo, Senegal, Guinea, India, Europe and Canada got together in order to promote traditional seeds.

"We recommend and call on public services in Senegal, in Africa and in the whole world to:

- *Immediately put a stop to all processes and acts of patenting on all*

57 A federation of producer organisations, not NGOs

forms of life, as it goes against the mindset of peasant communities, it clashes with their customs, their cultures, their beliefs and their ethics;

- *Conduct consultations […] with peasant communities before initiating any programme, law or policy on seeds and on agriculture in general […]*
- *Not allow private institutions (AGRA, USAID, NASAN…) to guide their research and national programmes;*
- *Promote family agriculture in all its diversity, to empower peasant communities to become autonomous, and to restore ecosystems and soil fertility;*
- *Magnify the role of women in all activities linked to seeds, as they hold the greatest expertise. Women are the guardians of seeds."*

Conclusion

Senegal, like the rest of the West African region, is the main centre of diversity of African rice, millet, yams, sorghum, cowpea and fonio. For generations, peasant farmers have contributed to the development of crop biodiversity, by regaining control over its management, upkeep and renewal based on their production systems and on their farms, following failed industrial agricultural polices. The choice of crops and the nature of used varieties are the key to agro-ecological agriculture, which creates many jobs, allows for a better management of natural resources, can adapt to climate change, and boosts local economies and societies.

The contribution made by peasant seed producers to family agriculture is pivotal, not only because of the consequences, but also because these farmers "*work like activists. Their motivation is their love for plants, for nature and their awareness that seeds are an invaluable treasure, which they need to safeguard for future generations. Their conscience gives them joy and peace, in the hardest moments. Armed with this awareness, they courageously confront the powerful enemy that wants to steal their seeds […]* (ASPSP, 2014: 15)

ASPSP illustrates the case of an organisation that is born on the breeding grounds of new practices that are implemented by a handful of agroecological food producers, spread across the country. It operates like a network, which mobilises around exchanges, and raises awareness on the importance of crop biodiversity for the future. It has demonstrated that it can take the path of seed autonomy and defend it at national, regional and international public

institutions, and this has been its main contribution to peasant and family farming.

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Irrigated plots of land in Kandiadiou (*Boukiling Department, Sédhiou)* ©BEDE

Maize earn preserved the traditional way, hanging from trees ©BEDE

Bo type granary promoted by ASPSP (Djimini, Velingara) ©BEDE

Tessito GIE Woman (Djimini, Velingara) © BEDE

Women Family Farming, fight against the climate change.[58]

Sunderbans, West Bengal, India

Introduction

In India, more than 65 % of the population lives off agriculture, 90% of whom are small farmers owning less than 2 acres. The notion of *family farming* was at one time assumed with most farmers growing for subsistence necessities. However, in today's neoliberal system, and the dependence upon cash money, there are economic compulsions upon most farmers, and even small farmers are taking the risk into commercial crops. At the same time there exists contract farming and corporate farming that are putting additional pressure to break down small scale family farming systems.

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Agriculture has been the basis of most rural societies, and served multiple functions in villages. With the creation of the caste system, and zamindari landlord systems, certain castes were denied access to lands and others were forced to become pastoralists, or specialize in other skill-based work.

There were farmers, however, who fell out of the caste system and were the adivasis or indigenous people of the land.

The present picture of agriculture in the country is taking a new turn. The previous stages may be divided into three parts – Traditional agriculture up to early 50's, The Green Revolution period up to 1990, Broad policy change in the form of introducing SAP and WTO compulsions in agriculture including promulgation of the Patent Act, the Bio Diversity Act, weakening and restraining the Essential Commodities Act, giving no effect to the PPVFR Act, introduction of GM breeds in agriculture, the introduction of the Bio Technology Regulatory Authority Bill, and the introduction of the Second Green Revolution in the country ranging from 1991 to the present day. Successive governments in power at the Centre irrespective of their party affiliations took more or less the same position in relation to agriculture.

The scenario in the state went in tandem with the Central policies with few exceptions like the introduction of vigorous land reform and demanding equitable prices of fourteen commodities throughout the country at same rate. The erstwhile state government okayed the Patent Act with proposal for minor unimportant amendments, raised no protest against the liquidation of the ECA Act by withdrawing control orders, adopted a line based on the Mackinsey report for the development of agriculture in the state, did not approve the recommendation of the State Agriculture Commission set up by the state government itself and gave approval to the Second Green Revolution activities covertly in the state for the next decade. The present Trinamool Congress government has done some positive steps but the basic scenario remained the same.

1. Peasantry in India national contest

The peasantry is dominated by large prevalence of small land holdings coupled with a large section of landless and marginal farmers. Agriculture is becoming more and more unprofitable due to liberalized economy, and the food and nutrition security of the farmers are at stake. They are dumbfounded by the chain of events in their trade. They are perservering with subsistence agriculture and migrating to a great extent.

The mainstay of food grain production is rice and the main component of rice production is Aman. More than 90% of the rural families are marginal and small farmers and data relating to them from '85-'86 to 2003 (as per 59th Round)[59] shows gradual growth of small and marginal farmer families. As per the income and expenditure of these families, it is also apparent that expenditure is more than the income from agriculture, which refers to crux of the problems of agriculture.

1.1 West Bengal, small and marginal farms

Whatever development in production of food grains has been achieved in West Bengal, small and marginal farm agriculture can be attributed to the same process.

Landlessness is on the rise throughout the period after the liberalization came into force. It also coincided with the disintegration of the land reform results where the state was not able to substantiate the land reform measures with other initiatives like full fledged institutional financing, providing market avenues, preservation of food grains, etc. It resulted in selling of land which in turn accelerated the pace of fragmentation of land more and widespread dispossession of land. The 61st Round[60], which refers to data relating to 2004-05 shows that 45.8% of the work force is dependent on agriculture and the percentage of marginal worker is 11%. Moreover, the percentage of agricultural laborers stands at 32.2%. The data shown by six district HDR's also relate to consistent rise in the numbers of landless laborers in the state. The development direction of this section is also of utmost importance from the viewpoint of alternative development in agriculture. It is certain that the land reform initiative of West Bengal was outstanding. Itplayed a pivotal role in poverty reduction in the state to a great extent and is the unique program unparalleled in the country.

The state has more than 50 Lakh [61]landholding families who have below 1 ha. of land and there are roughly 11 Lakh landholding families who have 1-2 has. of land. 3.82 Lakh landholding families have 2-4 has. of land and 60.000 families have 4-10 has. of land. Only 1000 families have more than 10 has. of land in the state. So, the state has a predominant population of small landholders and

59 http://mospi.nic.in/Mospi_New/site/inner.aspx?status=4&menu_id=54

60 http://mospi.nic.in/Mospi_New/site/inner.aspx?status=4&menu_id=52

61 One lakh is equal to 100,000

we can call it an agricultural economy of the small landholders. It is beyond question that the development of agricultural production in the state owes it to this small land holding community of family farmers.

From the recent demographic trends and figures it is also apparent that the numbers of landless laborers is on the rise in the state. This phenomenon does not correspond to the findings of the recent economic census conducted in the state. However, the rise in the numbers of landless refers to the fact that agriculture has lost profitability and lost potential of creating jobs. At the same time, the rate of daily real wages in the state agriculture has also gone down giving rise to all round migration. The 2011 Census Provisional figures give another grueling picture of the agriculture. It shows that people engaged in agriculture are diminishing in numbers. This is true for the country as a whole as also for the state.

For farmers, the cost of inputs of production has risen steadily but the price received by the farmers has not risen in comparison. Moreover, the recent rise in food prices are also due to aberrations of the market working like forward and future trading. Impacts of globalization have made the lives of farmers miserable. At least 850 of the 1429 commodities are agricultural which have been cleared under the State Administered Price (**SAP**) for decontrolled import-export. The subsidy in agriculture has considerably reduced in our country from 10 to 3 per cent whereas the same in USA has increased by more than 50%. In addition, the advanced countries are applying trade distorting import tariffs to guard their national economies. The 2000 report of the OECD countries refer that they have imposed import tariffs from 173 to 288 per cent on wheat, groundnut, barley, milk, ghee, butter, meat and egg. The farmers get no long standing benefit from the increased production, not getting legitimate prices in absence of a fiscal policy, friendly market network, non-execution of the policy of reserved purchase price for food commodities by the state and by the dilution of the Essential Commodities Act.

As per the 59th Round[62] of National Sample Survey the number of indebted households in West Bengal is 3.4696 million which is 8% of the gestimated farmer households with an average loan of Rs. 10931 per farmer household. 88.7% of these households belong to 1.0 ha of landholding category and 8.5% belong to 1.0-2.0 ha of landholding. Together the marginal and small farmers constitute 97.2% of the indebted families in West Bengal and that shows the gravity of the situation.

62 http://mospi.gov.in/national_data_bank/ndb-rpts-59.htm

According to the records of the National Crime Records Bureau, West Bengal reported an annual average of 1,454 farmer suicides between 1995 and 1999, 1,200 in the next five years, and 1,014 in the subsequent five years, Kerala and Karnataka are the only other States to have reported a significant decrease in deaths for the same period. But West Bengal is not far from the danger as the most developed district in agriculture, Burdwan, has reported two consecutive deaths in the recent days as per Times News network,

As per official figures, more than 50% of the rice produced in the state is from family farming and this is not covered by the irrigation command area. More than 80% of the total pulses, 65% of gram, 25% of nine oilseeds and 55% of sugarcane come from family farming in the state. These are figures relating 2008-09.

In such a situation, where negative externalities have rendered agriculture as a non-profitable exercise and when the expenditure of the farming families has outweighed their income and forcing them to rigorous indebtedness and migration, farmers of the rain fed areas of West Bengal are pursuing alternative agriculture. They are practicing sustainable agriculture through natural resource management practices and using better management at the farm level. This type of agriculture is not only an extension of the primitive agriculture but adopts nature's rule of creation and regeneration and thereby reducing the cost of cultivation to zero excluding the labor after a considerable cycle of 3-4 years after adoption.

These family farmers are actually the large chunk of small and marginal farmers, who are fighting for their food and livelihood by stretching the marginal productivity of labor to the largest extent. It is due to the lack of policy prerogatives in place on the part of the state to set it right by introducing proper social and community level interventions.

1.2 Sunderbans

The Sunderbans is situated in the coastal saline zone of the state and farmers there are at the mercy of the vagaries of nature and climate changes. Tidal waves, thunderstorms, cyclones, breaking of dykes and inundation of lands by saline water are frequent in this part of the state. We will relate to you the story of a strong women farmer, who has evolved herself as a model in the area who does and performs several roles by herself. She is like a Dasabhuja (ten handed women goddess), who apart from doing her services in her family, works for the group and society.

2. A strong women farmer

Patharpratima block of South 24 Pgs[63] is located in the southern part of Sunderbans, where agriculture is being practiced at nature's mercy. This area is very much vulnerable to climate change and porn to extreme weather events i.e. tidal floods, cyclonic storms, more variable precipitation and soil salinity that made the farming untenable, where around 90% of households depend on agriculture directly or indirectly. Agriculture here is synonymous with paddy cultivation, in a region that is mono-crop due to the shortage of fresh water. In this area, rain is the only source of water for agriculture because the groundwater in most places is salty and it's deep, making lifting of water for irrigation economically unviable. So, the single crop that is raised is a product of the monsoon.

63 Patharpratima (community development block) is an administrative division inKakdwip subdivision of South 24 Parganas district in the Indian state of West Bengal

On May 25, 2009, Cyclone Aila caused such widespread havoc loss. As its drastic effect, there was a high increment of soil salinity, which made the farming more difficult in last few years, which ultimately led to a great number of distresses or seasonal migration of men. Women are more vulnerable to climate change due to scarcity of fodder, firewood & water and less access to information that would allow them to manage such climate-related risks to agriculture and livestock.

Rita Kamila, a 32-year-old farmer of Ramganga village of Patharpratima Block in Sunderban region, was determined enough to overcome nature's unending challenge and achieved a sustainable source of livelihood in one of the world's top climate hotspots. She opted for integrated farming system, organic farming, vermi-composting and biogas. Rita has worked almost single-handedly for five years on her 165 decimals of farm to ensure the right mix of cultivation, poultry, fishery, and cattle.

Before, Kamila's family grew only paddy, that too in a low-lying stretch of 82.2 decimals. A few vegetables were grown on the remaining land haphazardly. She used to apply chemicals, fertilizers & pesticides in her agricultural field as well as in homestead garden. The yield was hardly enough to feed the family of four. There was no diversity and integration in their farm. Almost every year, tidal floods from the Gobadia River destroyed most of the crop. Frequent floods, cyclonic storms and soil salinity made farming indefensible, forcing her husband to become a cycle van puller as an alternative while she had to look after their field. "*In 2010 she cultivated Aman paddy, but there was no production due to high salinity*," she added her horrific experience on this note. As the days were passing by, she realized that the cost of external input in her farm was getting higher. She was in search of an alternative way to get rid of this entire problem. In that year, she came in touch with Indraprastha Srijan Welfare Society (ISWS) Sunderban, which was working in collaboration with Development Research Communication and Services Centre (DRCSC), Kolkata to attain food & livelihood security of poor & marginalized farmer through sustainable management of natural resources in that area. She shared her problems, and she was provided with some suggestions. Gradually she became more interested and joined the 12-member self-help group, Shanti Mahila Dal, nurtured by ISWS. Then she was oriented & trained on various topics of sustainable agriculture, ecological & integrated farming & its different components; other concepts of saline tolerant agriculture and relevant technical knowledge by DRCSC. She understood the importance and benefits of diversification, integration & interrelation of various sub-ecosystems. She started working hard to implement all her knowledge in her own farm.

2.1 Integrated farming system

In 2011, she opted for integrated farming system in her farm. Integrated farming refers to agricultural systems that diversify and integrate different subsystems including livestock, fisheries, poultry and perennial/seasonal crop production. This system defines output as total biomass outcome of the system. It is a more integrated approach to farming as compared to existing monoculture approaches. Rita was motivated to change the shape of the land, which could be developed into an integrated farming system by setting up a network of nutrient flow. Therefore, she has undertaken land shaping in her plot putting in some money of her own along with the Rs 5000 she received from DRCSC. Two ponds and a connecting trench was dug at the corner of the plot, so that water for irrigation can be available all year round, and the trench will act as natural drain for the flooding the saline water. The excavated soil was used for raising the level of the some parts of the plot, so that vegetables can be grown and the fertile soil from pond excavation was spread over the paddy field.

Rita realized that to get a productive farm she need to create farming diversification, which would be self-supportive, and a symbiotic relationship could be established with in it. In commercial farming, only few types of vegetables are grown and large areas are planted with a few varieties. This uniformity makes it easy to manage, but also makes the production system unstable and vulnerable to attacks of pest & diseases and climate change. Diversity in plant species as well as in the crops cultivated plays an important role in preserving our food habits and cultural tradition. Enhancement of ecological diversity has a direct impact upon the net production and income. About 55 percent of her land was kept for growing paddy and vegetables, 25 percent for fish culture, 15 percent for rearing of cattle & poultry and the remaining 5 percent for perennial trees & fruit trees i.e. mango, black berry, sputa, guava, lemon tree.

She started mixed cropping, crop rotation, crop combination and inter-cropping regularly in order to increase the farm diversity. For her homestead garden she started using techniques like mulch, raised bed, circle bed etc and saline tolerant paddy cultivation in low-lying trench and planted perennials trees. Animal husbandry is another important component of integrated farming system. At present, she has 2 cows and 27 chickens. Gradually, she shifted to ecological farming.

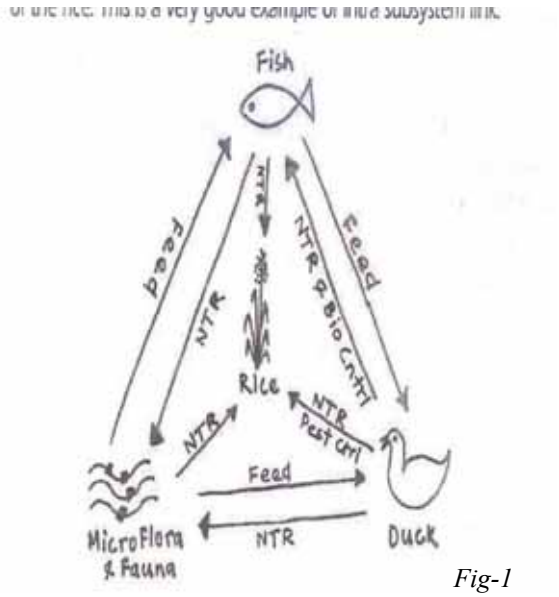


Fig-1

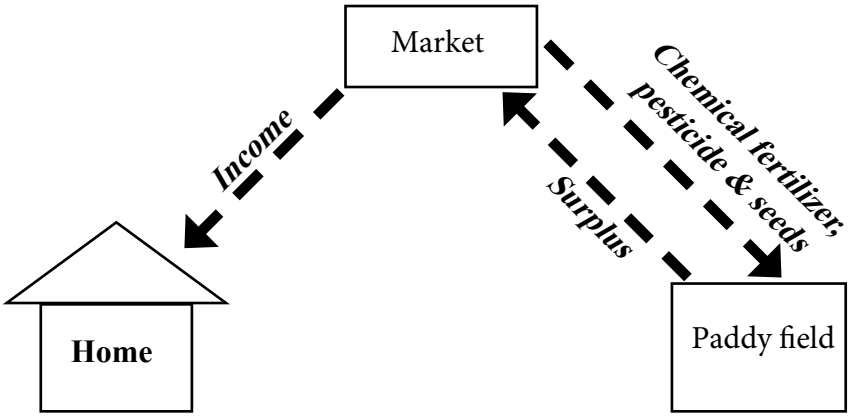
2.2 In the field

Next to diversification, integration is the most important aspect of sustainable resource management. In this ecological faming system, closer integration was attempted within each garden, rice field andpond. Integration in between fish, duck, azolla in ditch and rice field in *Kharif* (monsoon) season was introduced for improved nutrition, pest and weed control, aeration, manure and fodder. The ducks and fish were let loose in the rice field, acting as natural weed removers. This system maintains a circular flow of nutrients as shown in below flow diagram *(Fig-1).* Duck paddling in also check emission of Methane (CH_4) from paddy field in water logging condition. The fish bred faster.

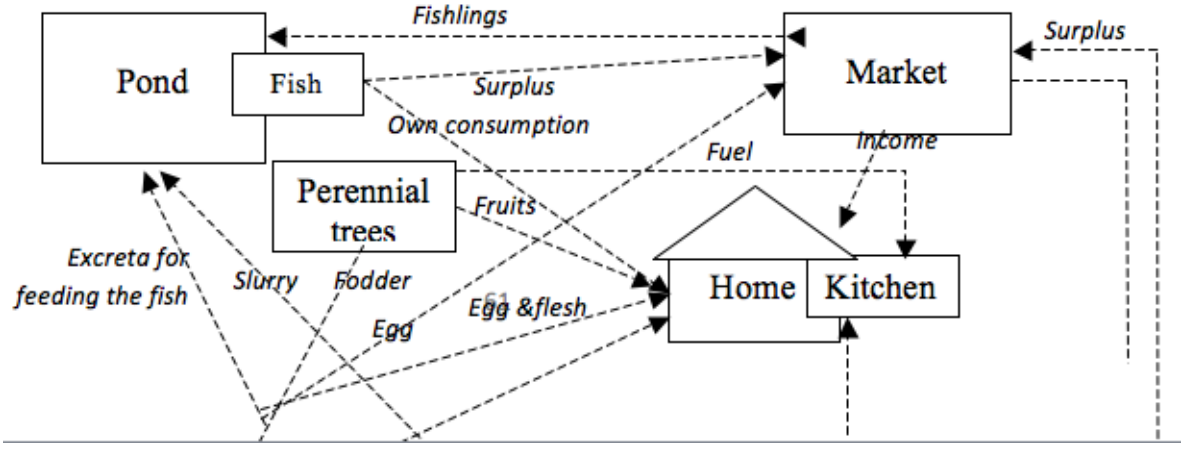
With a chicken coop overhanging the pond, the duck &chicken waste became food for the fish. Feeding on insects and pests, the small fish acted as natural water purifiers.

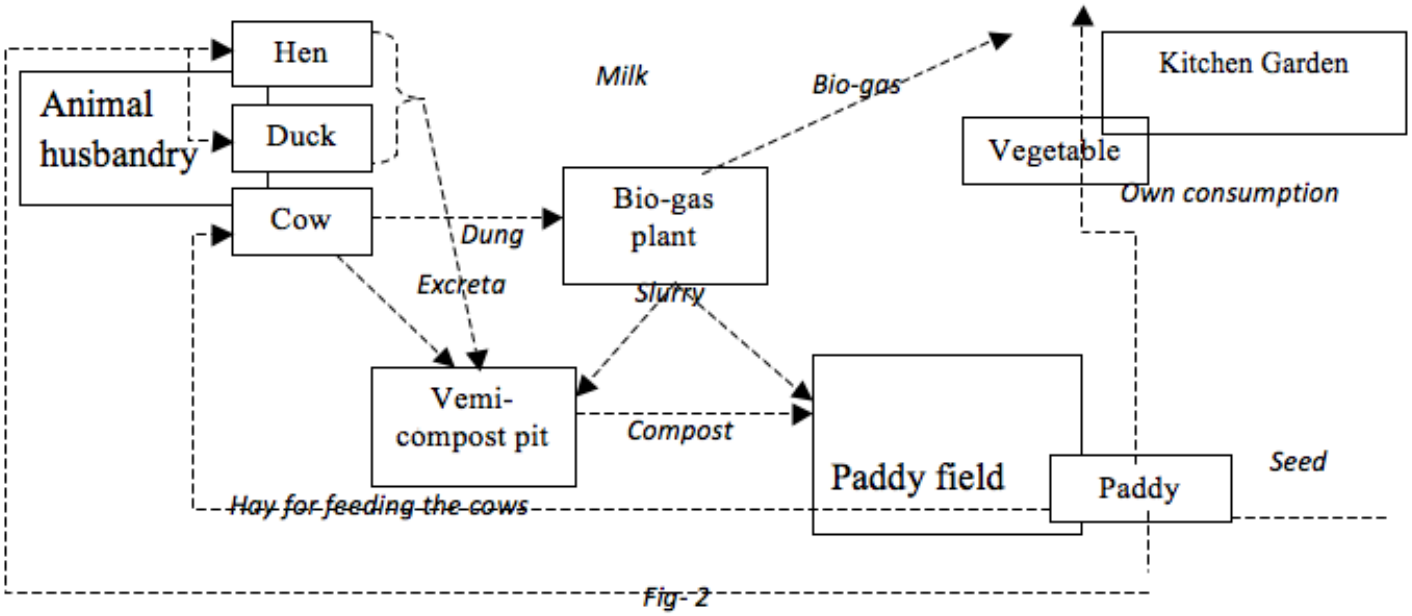
She started applying organic manure, vermi-compost, liquid manure, bio-pest repellant. She set up a vermi-compost pit to replace chemical fertilizer. She received training on preparation of vermin-compost from District Rural Development Centre. Organic waste generated from the farms, cowshed, household and other subsystems within the farm are being reused for making compost and manure. Self-growing local plants and weeds are used for making compost and also as nutritional supplements for family and cattle. Now she is exchanging this knowledge among members of her own group, others & outsiders. She already had some perennial trees, but she planted more like Neem, Bamboo, few Nitrogen-fixing trees i.e. Subabul (Leucaena leucocephala) for enriching the soil and for supplying fodder and fuel. The leaves of Leucaena leucocephala are highly nutritious for ruminants and animals.

The below flow diagram showing Rita's farm, before she opted for IFS (Before 2011):



The below flow diagram showing the diversification and integration of Rita's farm:





At present, Rita's farm began to yield two paddy a year, as well as 17-20 native varieties of different seasonal crops of vegetables i.e. Spinach *(Spinacea oleracea L.)*, Amaranths *(Amaranthus blitum L., Amaranthus viridis L.)*, Piring *(Trigonella corniculata L.)* etc. "I am growing and also preserving seeds of 25 different native varieties of those vegetables using the traditional techniques. Only the sunflower seeds that I have bought this season", "*No more I am dependent on market*", she added.

"My family now enjoys organic vegetables and grain, and healthy fish and poultry products", she added with smile. Now she even has surplus for sale. "I earn around Rs 12,000 to Rs 14,000 by selling the extra boro paddy and another Rs 5,000 from the surplus vegetables each season," she says. Presently she is selling her organic paddy to the local market and almost all the vegetables to a local primary school where it's being used to prepare mid-day meal for the students and rest to the local market. *"I happy that school students are having chemical free food"* she said. Her earnings from eggs and milk are good.

Rita set up a biogas plant, which was subsidized by the West Bengal Renewable Energy Development Authority, and she managed to invest Rs 9,000 by herself. Previously she had to spend more hours for firewood collection and for cooking purpose. Now she is using biogas for cooking purpose. She shared, "Previously there was huge indoor pollution due to using the conventional *chullah.* Cooking was time consuming too and

I had to spend more time for fuel wood collection. Today, I use biogas for cooking and it helped me to invest more time in field," she said. Health hazards also decreased. "I am using its slurry as manure in the field," she added.

"Now I have become the earning member of my family," she said. She is using part of her earning for children's education, other purposes and a small amount is saved. It helps to ensure her participation in family decision-making process and gives her an individual identity. "Now I can take decision jointly with her husband on different issues related to cultivation, assets creation and children's education etc., even completely myself in absence of my husband," she added. This helps to raise her confidence level. Now she is leading her SHG, also working as resource farmer cum trainer of ecological farming. She is proud to call herself an integrated farmer. She works hard on her farm in order to become self-sufficient and to ensure a better future for her children.

Conclusion

Integrated farming is bringing food security, economic upliftment, and increased protection against climate change. Largely, it has motivated many Sunderbans women to opt for IFS in order to achieve food security as well as financial independence. Gouri Mondal, Shefali Maity, Panchami Midya, Anita Bera and many of the 31 farmers in the Patharpratima have undertaken IFS on their farm. This gives many women like Rita an individual identity and courage to stand up in their own feet to fight against climate change.

BOX
Family Farming in a net food export country. (Southeast Queensland, Australia)[64]

Introduction

For cultural reasons the word 'peasant' is rarely used by Australian farmers, instead choosing to identify as 'farmer', 'grazier', 'orchardist', 'market gardener' or 'grower' etc.

Smaller farms were a large part of the farming landscape but have steadily declined over the last 20-30 years for a number of reasons.

Australia is a net food exporter, particularly of grains and meat. Agriculture is highly mechanized and is dominated by large enterprises producing large quantities of a small number of crops or animals, often carrying large amounts of debt.

Many family farms, both large and heavily mechanized and small scale, cannot support a family so off farm work is common.

The retail sector in Australia is dominated by 2 large chain stores whose market power has made a market increasingly hostile for small farms using mainstream marketing and distribution systems. Over time there has been an increasing amount of negative press around the practices of the major supermarkets, which has led to a backlash against this system which has led to increasing opportunities for small farmers willing to sell directly to families in urban areas

Australia is a high wage country, and successive Australian governments have embraced the ideals of free trade and have removed almost all tariffs so many Australian producers have gone out of business due to imports particularly of processed foods from low cost countries and countries with subsidized production.

Farmers represent only a very small proportion of the population and are often separated by vast distances. This isolation has reduced a little with the advent of electronic communication but is still a major issue for farmer organisations.

So *Peasants* still needs to be recognized by governments and majority of Australia's population that live in the city, as a viable solution the social, economic and environmental crisis that are looming and to be supported.

64 By: A*ustralian Food* Sovereignty Alliance's (*AFSA*)

At present the large majority of fresh produce available for people to buy travels large distances across Australia, so has very high food miles. Family farmers are well placed to provide their local communities with fresh, in season produce that has low food miles.

There is a huge potential for family farmers to work together to solve problems and to reestablish local and regional food networks, even if the tyranny of distance between farms, makes it difficult for farmers to connect to each other to discuss on the current regulations that are not scaleable and the price of complying can be major barrier to family farmers diversifying

A diverse family farm

Symara Organic Farm is a small, diverse family farm located in Southeast Queensland, Australia. Located in granite hills at an elevation of 860m and 28 degrees latitude. The farm produces a wide variety of vegetable and herb crops plus strawberries, laying hens, meat chickens and beef cattle.

Everything is sold directly to families through a box scheme or via farmers market. The box scheme utilizes produce from the farm plus from other growers locally and regionally to provide good, affordable food for families in neighboring towns. For the farmers market, produce is pooled with other local growers and marketed collaboratively in Brisbane.

The flexibility and higher returns from the farms marketing arrangement have allowed a return to a more traditional, mixed farm with multiple crops and multiple species of animals.

The farms box scheme has been a valuable entry point for some people who wanted to start farming in a small way, but who had few outlets for their produce.

The farm's marketing systems, use modern information technology to make a traditional mixed farming operation viable.

Neither of the owners of the business were raised on farms, coming to farming after time spent in other occupations. This meant a break in continuity of family farming knowledge which is still being overcome.

Symara farm is heavily involved in local farmer groups including a participatory guarantee scheme, and marketing group as well as regional farmer groups.

The farmers visit other farms whenever possible and encourage information sharing between farmers.

Compost is made from various sources of biomass found on farm, but some purchased inputs are used. Some seeds are saved on farm, but most come from small seed suppliers.

So the results are stable in the long term providing a viable alternative to tackle food insecurity and poverty in rural areas: this farming system provides good food for the farming family and to a loyal group of customers who have a sense of 'belonging' to the farm, so connections between farmer and customer families are strong.

This method of farming is meeting the needs of its closest communities by providing fresh, nutrient dense, chemical free, seasonal fruit and vegetables with diversity in the number and types of varieties available, which is sadly lacking from supermarkets.

In an area where farming families are leaving farms because of poor market prices and high levels of debt, this farm provides a model for others looking to move outside mainstream marketing channels.

At the same time there is an increasing number of urban dwellers looking to change location and become connected to their agrarian roots. This farm provides them with a way to start afresh with open sharing of knowledge and connection to other like minded farmers old and new.

Most of the land owned is in fact intact native ecosystems, which the farmers are carefully stewarding to maintain or improve biodiversity

Employment is difficult for small scale family farmers because wage costs are high and because as small scale farmers need to be continually innovating make it difficult to afford workers. This requires creative solutions by utilizing Willing Workers On Organic Farms[65], and labor exchange with other small scale family farmers in the area.

65 http://www.wwoof.net/

Artisanal Family Fisheries: a case of in Gujarat[66]

Introduction

Fisheries in the World

Seventy percent of the earth is occupied by water and the rest 30% is land, utilized by humans to earn their livelihood. The land mass also includes the coastal areas and the marine life, which the people use to earn their livelihoods.

These people are well aware about the significance of marine life and equally understand its importance for preservation and protection of biodiversity.

66 By: International Collective in Support of Fishworkers (ICSF) an international non-governmental organization that works towards the establishment of equitable, gender-just,self-reliant and sustainable fisheries, particularly in the small-scale, artisanal sector.

The coastal areas both land and water are home to different and special types of marine species. A large number of human population survives on these species, while a few communities are specifically dependant for their livelihood on these very marine species.

According to the statistics of Food and Agriculture Organization (FAO), in the year 2000, nearly 390 lakh people in the world were directly dependent on fisheries for their livelihoods. Nearly 87% people of these 390 lakhs are the traditional fisherfolk and aqua culturists from Asia. 120 lakh people are directly engaged in fishing and nearly 1200 lakh people are directly or indirectly engaged in fisheries for livelihood.

1. Status of Fisheries in India

Of the coast line of 8085 kilometers of India, nearly 20.20 lakh kilometers are continental shelves which are spread up to 200 miles from the shore and forms 2/3 of the country's total land mass. These shelves are home to very important coastal resources including the salt water reserves. Salt water fishing is done on nearly 71.15 hectares area, (fishing in rivers constitutes 14.22 lakh hectares

area, ponds and dams constitute 28.55 lakh hectares area and other fisheries constitute 7.88 lakh hectares area), of which 1.71 lakh kilometers area constitutes fishing done in rivers and by the use of ultra-modern technologies.

Nearly 25% of India's population is dependent on fisheries and coastal areas for their livelihoods[67].

India is 7th in fish production. If we view the statistics on production of fisheries, we find that most of the dependent population engages in traditional form of fishing and rarely utilizes techniques like aquaculture. In the year 1999-2000, 59.59 lakh metric ton of fish production was done, out of which both the marine and fresh water fisheries constituted 28.33 metric ton each. This reaffirms that if

the 20.20 lakh hectares of continental shelf which is nearly 10% of India's area is better preserved and managed, and the fishing is made more organized, there is a lot more scope for marine fisheries in the country[68].

According to the 1998 handbook of fisheries, nearly 59.59 lakh people

67 Techno Socio Economic Survey for Fisherman Community in Gujarat Commissionarate of fisheries Gandhinagar

68 idem

in India are engaged in fisheries, out of which 2 lakh use traditional methods and account for nearly 40% of the total produce[69]. Both marine and fresh water fisheries account for nearly 90 lakh metric ton of fish production every year.

2. Fisheries in Gujarat: The Gulf of Kutch

Located in the west coast of India, Gulf of Kutch is an inlet of the Arabian Sea which is majorly spread across three districts namely Kutch, Jamnagar and Rajkot and touches Surendranagar district. It is located at a latitude and longitude of 22º15`- 23º40`N and 68º20`- 70º40`E respectively[70].

The distance between the mouth of the gulf and the open sea is about 175 kilometers long and

the distance of the Gulf from Okha is 75 kilometers. The total area of the Gulf of Kutch is spread across nearly 7500 square kilometers. The Gulf has 5722 hectares of Mangroves forests which play a very important role in maintaining the eco system of the Gulf. The Mangroves help in restoring oxygen in the sea water and also help in controlling the salinity of soil and water in the area.

Mangroves also support nearly 210 types of algae in the region. The Mangroves and the coral support these algae which play an important role in maintaining the marine ecosystem. This is the reason that nearly 457.92 square kilometer of area has been declared as marine national park and 162.89 square kilometers have been declared as marine sanctuary, with characteristic marine species.

a. The ecological conditions in the Gulf of Kutch

Humidity levels are very high in the Gulf of Kutch. In August it is around 82% and in December-January it is around 60%.

Kutch has the second largest area consisting of mangroves in India. In Gujarat itself, Kutch has 82% of the total mangroves in the state and its growth here is faster than in other areas. One can find mangroves ranging from 1 to 5 meters and sometimes 10 meters tall in the Gulf of Kutch.

There has been a steady decline in the mangroves in the area owing to increase in salt making industry in the region. Others factors like development of port, jetty, pipe line etc. are also responsible

69 Infochange Magazine

70 Mangroves in Gujarat, H.S. Singh, Geer Foundation Report

for the decrease in the mangroves. This in addition pollution due to petroleum, the development of mangroves has been stalled. In 1975, the area of mangroves was 733.53 square kilometers which has decreased to 177.31 square kilometers in 1982. Coral reefs are mostly found on the coasts of Jamnagar district on the 34 islands out of the 42 islands in the Gulf of Kutch. The corals found in Salaya area is 5240 years old, in the Okha are, they are 45000 years old. According to the 1975 report, 28100 ton live corals are present on 25 islands and 609000 ton dead corals are found on these islands.

Every year nearly 20 ton of corals break away. Out of the 39 species of corals, 24 are live corals and are found in majority[71].

2.1 The fish and fisheries in Gulf of Kutch

Gulf of Kutch has nearly 65000 square kilometers of continental shelf which are home to nearly 200 types of fish. The presence of mangroves and the coral reefs and the resultant suitable marine ecosystem are responsible for the abundant amount of fish present in the area. On both sides of the Gulf, a large population practices traditional fishing in the tidal waters. Wherever there is good amount of tidal water and mangroves leading to favorable condition, one can find fishing communities in large numbers. Fishing is also prevalent on conventional and old ports as well as river sides. The Tropic of Cancer passes the northern border of Gujarat, leading to favorable tidal condition bringing in high and low tides at regular intervals, resulting in abundance of fish at the shore. This leads to the fishing community relocating to area for nearly eight months every year, leaving behind their homes and families in search of a good catch. The passing of Tropic of Cancer through the Gulf also leads to abundance of Dray fish in the Gulf of Kutch and Bombay duck and Dray fish in the Bay of Bengal. The fishing of these species is specially done in Gulf of Kutch and Bay of Bengal. If we divide the tidal areas of the Gulf of Kutch, the areas with regular tides, have a different type of fishing community and fishing techniques. The type of fishing carried out in Kutch is:

1. Pagadiya[72] fishing (fisherfolk go on foot into the sea and do fishing)
2. Fishing on mechanized boats

71

72 Pagadiya fishing is basically fishing on foot During low tide, fishermen walk into the sea, usually a little ahead of the waves where the water-level is low. They place their nets on sticks planted into the mud. As the water comes in during high tide, the water covers their nets and brings the fish from the Arabian Sea into the algae-rich inter-tidal zone to feed there. When the water recedes during low tide, the fish that have swum into the intertidal zone get caught in these nets. The fishermen walk and collect these fish.

3. Fishing using trawlers

4. Seasonal fishing

5. Part time fishing

During low tide, fishermen walk into the sea, usually a little ahead of the waves where the water-level is low. They place their nets on sticks planted into the mud.

As the water comes in during high tide, the water covers their nets and brings the fish from the Arabian Sea into the algae-rich inter-tidal zone to feed there. When the water recedes during low tide, the fish that have swum into the intertidal zone get caught in these nets. The fishermen walk and collect these fish.

The geographical condition of the coastline along Kutch.

In the 405 kilometer coastline of Kutch, the tidal mudflats are spread across 5 kilometers to 20 kilometers inland. This spread of land can also be categorized into different zones with different marine ecosystems. The fishing also differs in different marine ecosystems zones. Kutch can be divided into four major marine ecosystems zones

The zone 1 is spread from Surajbari to Kandla, zone 2 from Kandla to Mandvi, zone 3 from Mandvi to Zakhow and zone 4 from Zakhow to Lakhpat. The fishing in all the four zones differs and is affected by the salinity in that particular zone.

Zone 1-Surajbari to Kandla: As per the livestock census of 2003, there are 752 fishing families with a population of 3747 living in the area. They are spread across five fishing community villages. They are mostly Pagadiya fisherfolk, practicing seasonal fishing in the tidal zones. During the monsoon, in the upper areas where the rain water mixes with the saline water, a lobster called

kuctchian seej is found. In the rest of the year, Pagadiya fishing is practiced in the area. There are 294 fiber and wooden mechanized boats and 267 non mechanized boats in this area. These non-mechanized boats are specially used for fishing the kuctchian seej lobsters in the area. In this area, the number of fishing net, gillnetter (bed) is 33521 whereas the wooden (board) net, which is used for Pagadiya fishing is 5334. The number of beg net; specifically used for Bombay duck fishing is 6423. The number of other nets is 4092.

The machines used in the boats range from 10 to 15 Horsepower. Here geel netting and dol (Bag) netting is practiced mainly as it is a low tide area. Further mostly Pagadiya type of fishing is practiced. In the area, the annual production from fishing is 5251 metric ton with earnings of 24.3 cores.

If we look at the region, due to an increase in salt pans and salt making industries in the area, the areas for Pagadiya fishing are decreasing day by day. This region accounts for nearly 90% of salt production in Kutch. Due to mixing of salt water from the salt pans during the monsoons and its mixing into the sea water, a lot of tadpoles and small fishes are destroyed in this area, resulting in decline of the fish population.

Zone 2 – Kandla to Mandvi: This area is known for its high tides. Due to these high tides, this area receives a lot of migratory birds for breeding. The mangroves provide safe spaces for the birds to make nests and lay eggs. Due to a straight and flat coast, Pagadiya fishing is practiced in large numbers in the area.

The population of the fishing community here is 1171, nearly 50% of which do fishing by boats and the rest 50% practices Pagadiya fishing. This area has 844 mechanized boats, 2 non mechanized boats and 45506 fishing nets in the area.

Out of the 45506 nets, 29756 are geel nets, 4052 are gunja dol nets and 4349 are Patti nets. The hook and line nets are not used much in this area. As there is abundance of mangroves in the area, it is used as fodder for the livestock by the local Maldhari community. This area is also known for cultivating dates palms.

Salt making is practiced in abundance in this area, and nearly 15000 people are engaged in salt making, producing nearly 6 lakh ton salt, amounting to nearly 30 crore every year. Due to presence of muddy soil and flat terrain, this area is suitable for planting mangrove. But due to recent industrialization and salt making increasing day by day, the area for mangrove planting is steadily

Decreasing. The industrialization on the coast has destroyed significant amount of mangroves in the area.

This area has a good population of lobster and crabs due to the presence of mangroves, flat terrain and suitable environments, and is thus very suitable for Pagadiya fishing and fishing by traditional

boats. Due to an increase in industrialization, the livelihood of the fishing community residing in these areas is in grave danger. A proposed 25000 megawatt power plant, based on coal is expected to pose great dangers to the marine ecology in the region. This area is also set for an investment of 141909 crores for setting up 44 industrial units. All this industrialization is definitely going to harm the marine ecology and the negative impacts of the same are already evident on the marine ecology and marine lives in the region.

Zone 3 - Mandvi to Zakhow

This area has three ports. Fishing is done all round the year on this coast as this is regular low tide area. The100 kilometer coast line is the maximum producer of fish in the area and fishing is practiced on both the edges of this 100 kilometer stretch. The in-between area is unsuitable for fishing and even Pagadiya fishing is very minimal in the area. This area has 1340 fishing community members out of which 486 belong to the traditional fishing community of Kutch.

On the Zakhow port, nearly 700 boats from Veralal, Porbander and Valsad come to this area for fishing every year. The annual fish production in the area is 47300 metric ton amounting to 222 crores. The area also has a lot of small scale salt making industries. As compared to the other zones, this area is lower in biological diversity and marine life. The proposed industrial investment in the

area amounts to 13389 crore but as this area does not have industrial units that are harmful for marine ecology, the sea life has generally remained unharmed and there is no evident loss of marine lives in the region.

Zone 4 – Zakhow to Lakhpat: This area is full of marine life and biodiversity. It receives a lot of tidal water and hosts a lot of mangroves which harbor good populations of fish and prawns. As per the records of Fishery Department, this area has 861 fishing community households spread across 35 villages and fisheries support the livelihoods of 4013 individuals in these villages. A good thing in this area is that women also engage in fishing and quite a few women also have Pagadiya fishing license. This area has 100 mechanized and non mechanized boats. The annual fish production of the area amounts to nearly 26 crores. In this area, 38089 fishing nets are used out of which 24212 gill netter nets which are mainly used by communities are fishing by boats, 7795 wooden Patti nets are used by pagadiya fisherfolk and 51 guja or doll nets are also used by others. In the months of November and December, the

monsoon water from Greater Rann of Kutch mixes into the saline water of the Arabian Sea on the sides of Surajbari, which is very suitable for prawn fishing. But due to climate change, the prawn and fish production and has decreased drastically in the last ten years.

The industrialization in the area is affecting the marine ecology drastically. The proposed investment in the area by the industrial houses amounts to 21689 crore. The Sanghi Cement and the Gujarat Government's Power plants in the area have destructed the marine ecology and the mangroves to a very great extent.

Fishery has also been negatively impacted by industrialization in the area.

As per the environmental and ecological conditions in the 4 zones, the practices and ways of fishing are different and are done as per the environmental conditions specific to the 4 zones.

As per the data of Central Marine Fisheries Research Institute (CMFRI), 24152 boats are used for fishing in the 1950 km of coastal area. In Gujarat 323215 people from 59889 families from 263 villages are directly dependent on the marine's fisheries. The fish production in Gujarat in 1985 was 280000 metric ton which increased to 740000 metric ton in 1975 but since then has shown a gradual decline, bringing it to 410000 metric ton in the year 20047. On the other side the number of people engaged in fishing and the number of boats used for fishing has been increasing constantly. As per the report of the CMFRI, the increased pressure on fisheries and excessive fishing, mostly by the outsiders has resulted in low per trip production.

In Kutch district, 3497 families are directly engaged in fisheries. These families still use the traditional methods of fishing. In Gujarat, Kutch is third largest producer of fish which accounts for 11.2 % of total production. Due to strong market demand there is huge pressure on coastal fishes, there is huge demand of these fish in abroad, and its export earns valuable foreign currency for India.

Since 1980, major changes in fishing methods have been observed due to international marketing opportunity in Fishery.

In Kutch district, more than 2000 families livelihood depends on fisheries. A small sample of families has been taken for study

purpose. In Kutch, fisheries have been done in 18 ports, in these 3 ports are very small size and in these ports less than 10 families are engaging with fisheries sector. For research purpose 15 ports have been taken. A sample of 40 families has been taken for studies in ports where more than 400 families resides. Further a sample of 20 families has been taken where 151 to 400 families resides; also another sample of 10 families was taken where 150 to 50 families reside and a sample of 5 families was taken where the no of families resides in the port is less than 50. Simple random sampling method was applied for the selection of respondent in each port. Head

of the families of the sampled household is used for taking information. The details of sampled household in 15 ports are as follows:

S.NO	Detail	Total HH	Sampled HH	Percentage
1	Rampar takra Port	65	10	6.5
2	Vira Port	117	15	12.82
3	Vavdi Port	126	15	11.90
4	Juna Bandar(Kukudsar)	150	20	13.33
5	Randhbandar- Mundra	401	40	10
6	Jakhu Bandar	501	40	10
7	Surajbari	75	10	13.33
8	Salyabandar	175	20	11.42
9	Narayan Sarovar	189	20	10.58
10	Nana Layja	195	20	10.25
11	Cherwadi	59	10	16.94
12	Others	198	20	10.10
		Total	240	

In Bhadreswar and Jakhu port the highest number of households is engaged with fisheries. The 40 households have been taken as sample in both the ports. In these two port highest number of household earn their livelihood through fisheries. Some nearby village fisherman communities also come to these two ports for fishing. 20 households each were selected as sample from Junabandar,

Narayan Sarovar, Nana Layja ports

In the process to collect primary data focus group discussions were conducted with different fisherfolk groups. Discussions were also conducted with various organizations who are working for the development of the community. In addition to this behavior of the fish folks was observed. Applying all these, the following conclusions were drawn.

3. Small scale traditional fishing : the specific added value

It has been observed that most of the fishing area used by the fisher folks is tidal mud flat, due to traditional fisheries practice the input cost is low and even with modest fishing the fisher folk earn decent income. The environment status of the mud flats is good due to traditional fishing practice.

a. Role of fish quality in fish market

The fish production has decreased in the last 10 years whereas the price of fish has increased 3 fold during this period, but an increase in fish price is not correlated with the fish production. In the year 2007 the Kutch based organizations working for fisher folk have coordinated with the fish exporters to create marketing facilities to the local fisherfolk; during this course the organizations motivated the fisher folks for quality improvement. Earlier they used to sell the fish directly in local market but now they are doing the shorting , grading , washing and drying their fish to cater the export needs, this has resulted in good price and now 40% of the fisherfolk are directly selling their produce to the exporter. This quality improvement initiative increased the price of fish and the price of fish was doubled in the year 2007 compared to what they use to get in the year 2006. The quality improvement has also attracted various exporters which resulted in increased price of fish. It clearly shows that little processing

such as grading and drying results in quality improvement and also in premium pricing. Still this kind of simple technology for grading and drying are not available in most of the parts of Kutch coastal area. It is observed that in most of the ports only Muslims are fishing and fisher folks are homogeneous but at Jakhu port some Hindu families are engaged with fishing. Jakhu Port is more

competitive and fisher folks give more heed to quality. It has been observed that heterogeneous groups increase the competition, which results in quality improvement.

b. Effect of migration in fishing community and role of institutional design

Fisher folks migrate to coastal area and spend 8 months of a year there. In this period the community is not in contact with the village. The community is not aware of new technologies and demand of market traditionally they sell their fish to local middlemen and they don't give much importance to the quality aspect of the fish. Educational level of the middle men is low and for years they trade with the same businessmen and they feel doing business with new person is risky. The risk taking ability of the middlemen is low and these factors make the hurdle for entrance of new businessmen.

The fisher folks have traditionally been migrating to the coastal areas for their livelihood. This in turn hinders the education of the fisher folk's children but no initiative has been taken by the government to create infrastructure and facilities which suit the community. The dropout rate is high leaving most of the community illiterate. The ports are not registered in the government records, and hence one does not find any government schools for educating the children.

Child marriage is still practiced in the community which results in malnutrition in the offspring.

Since 1980, the use of boat in fishing has been increasing in the Kutch coastal area.

It has changed the process of fishing, but still fisher folks don't use the trawler for fishing. Fisher folks feel that use of trawler is a great risk as these trawlers are expensive and no external support for credit is available. Lack of risk taking ability is detrimental factor for adopting new technologies.

3.1 Role of resource mobilization

In Kutch coastal area mostly fish are dried and sold, although fresh fish are also sold fresh but ice is not used to maintain the freshness of the fish, thereby deteriorating the fish quality. Fisherfolk feel that using ice is expensive, so they don't practice it.

No change has been seen in the fisher folk's attitude regarding the quality of dry fish. One of the major reasons is that the fish quality in the area is not up to the market demand. Lack of quality dry fish also deter the outside businessmen from entering market. There are some fish such as 'golden Anchovies' is processed (washing,

grading, sorting, drying) properly, then these fish can easily fetch just double the existing market price. This kind of processing can be easily done by the fisher folks but due to lack of awareness and infrastructure they don't practice it.

Due to the traditional fishing practice the marine ecology is still good in the area compared to the area where new technologies such as trawler is used in this area passive nets are used for fishing which is also a major reason for good quality marine ecology.

Fisherfolk start learning fishing at young age of 12 to 15 years this effect in low educational level in the community. They don't give much importance to education as the young child mostly takes care of their younger siblings.

Adolescents are engaged in sorting and grading of the fish. The household works become more important than their education. Children mostly learn the fishing skills through their elders and they have good occupational skills. They know the marine environment, good knowledge about the fishing area, fish varieties and taking care of their resources.

3.2. Public policies on fisheries and Kutch coastal area environmental status

The industrialization in Kutch coastal area is not as much as in the southern part of the Gujarat. Tidal area in the region supports Pagadiya fishing. Due to the tidal area the Pagadiya fisher folk get continuous supply of fish.

The Government of Gujarat has implemented many programmes for the socio – economic development of fisher folks in the state but it has little impact over the traditional fisher community. Mostly, government programs give benefit to large fishermen, and the has government failed to develop programs which help traditional and small fisher man. The government has not focused on developing the technologies which support small and traditional fisher folks.

Every year government give target to fishery department for the socio economic development of the community which is mostly not used due to lack of programs designed for small and traditional fishing. The government programs are design to cater the need of

professional fisher. The implementations of these programs are done by government cooperative and there are very few active cooperative in the Kutch region who can take benefit of these programs.

The Government has not shown interest in developing the traditional fishing as to the other traditional occupations. In the year 1982, chairman of 20 points program visited the area and recommended the government to take infrastructural development for the development of the community but till date no action has been taken in this regard.

In the study area fisher folks migrate to the coastal area for eight to nine month in a year where there is no basic infrastructure. They fight with the vagaries of nature to earn their livelihood. Due to homogeneity in community development program can easily be implemented. The community has good knowledge of marine ecology and coastal ecosystems.

3.2.1 Weakness of fisher folk community

Low educational level in the community is one the major reason for minimal use of technologies in the occupation. Traditional fishing practice results in low output which directly affects their low income and substandard living. Outside market knowledge and information regarding the correct price is minimal, mostly dependent on middlemen for selling their produce. All the occupation

related decisions are taken by elders and youths don't get opportunity to take new initiative. They have limited risk taking ability.

I. The impact of changing technologies on fishing

a) Economic status of fisher folks isn't bad. The community can be categorized as medium income group.

b) In the last 10 years due to technological intervention and changes fish production is increased but the price of fish has not increased. Due to the demand in the international market basic infrastructure in fish production is improved. Earlier they don't do processing of fish but now with the intervention of NGOs they have stated fish processing such as sorting, grading, washing and drying of the fish. These interventions have improved the quality of fish production.

c) With increased income, mostly they invest in buying new boats and improving the comforts in the boats. Increased income has also

resulted in wasteful expenses such as use of pan masala, fancy mobile and motorbikes.

d) After the cyclone in the year 2007, the fishery department and NCDC gave loan to the fisherfolk to buy new boats. In this procedure local middleman reaped the benefits and fisher folks came under a debt trap.

e) Due to the monopoly of local middlemen in the fish market, the community has little bargaining power to sell their product. These local middle men work as syndicates and if any person tries to protest against low price of fish, no one buys fish from that person. It is a great risk to their livelihood. But the situation has improved in last five year.

f) Earlier middle men used to give loan to the fisher folks and purchase their product at very low price. With the intervention of local NGOs now they get the credit facility in low interest rate and even they are selling their produce at high price that has resulted in 75% increase in their income.

g) Joint families have increased the number of fishing boat and it has increased the family income.

II. Technological changes

a) In Pagadiya fishing, chronologically changes have been observed in the use of net. In 1900 they used to use branches of thorny trees to catch fish. After that they used nets made of coconut ropes, these nets were heavy and then they started using net made of silk threads. Silknets were weak and they broke easily. Due to technological development, plastic nets and HDPE nets came in the markets that are light and durable. These nets are very suitable as per the need of the Pagadiya fishing. Presently the community uses plastic and HDPE nets for fishing.

b) No change has been observed in the method of fishing. Fisher fold doesn't use trawlers or line passing methods are not practiced in the study area.

c) Changes have been seen in the use of boats for fishing. Wooden boats were used in the fishing are not replaced by the fibreboats. In fiber boats maintenance cost is low and the boats are durable. The fiber boats are mostly brought from Alang ship breaking yard, where these boats are part of the safety boats in the large ships. The fiber boats need little maintenance that's why it has become popular with the folk for fishing activities.

d) Technological changes have also been observed in the technology of machine used for fishing. Locally available inboard machine is

popular because of low maintenance cost.

e) Fisher folks have changed the fish processing practice as well. Now greater emphasis has been given in processing such as grading, washing, and drying as per the market need. Grading process has increased the overall price of the fish. Now fish are graded and each grade has different pricing thus helping in an overall increase in the earning capacity of the fisher folks.

III. Migration status

a) Distance between the fisher folk's villages and fishing ports is quite long, being a main cause for migration. Rapid industrialization has polluted the traditional fishing creeks, thereby resulting in low fish production. This has forced the fisher folks to search for fish in more distant areas.

b) Some other reason such as lack of adequate place for fish processing, transportation also forces the community to migrate.

c) Fisher folk face various kinds of difficulties in migration but without migration they cannot continue their occupation.

d) Migration cost is very high for the community as they have to develop all the basic facilities at the coastal area for the migration period of 7-8 months.

e) Migrant fisher folks face many problems such as, waste expenses, lack of health, and education facilities, unhygienic drinking water and lack of transportation facilities which makes their life difficult.

IV. Social changes

a) Increased income in the fisher folk's communities has also resulted in wasteful expenses especially in marriages and religious ceremonies.

b) Yusuf Mahurali Sangatan, a local NGO is actively working for the educational development in the community. The organisation has stated school in the part area where the community migrates; it helps the children to continue their education even during the migration period.

c) Joint family is practiced in the community and education level is very low which bring high productive rate and no. of child per couple is high. Lack of entertainment facilities at the fishing ports also contributes to higher no. of children.

d) Lack of education facilities in the fishing port area directly affects the literacy level of the children, even the awareness level in parents

for the literacy is low and they don't give much importance to education.

e) Fisher folk communities are politically and economically strong. For last ten years, the community is actively participating in the social issues. The community now speaks and fights for their rights.

V. Reasons for these social changes

a) The increased use of mechanized boats, fiber boats, the increased demand for fish and the decreased availability of fish in the region are several reasons for the changes in fishing by traditional boats.

b) The changes in the kind of fishing nets used is due to changes in fishing practices, decrease in production due to excessive fishing, fishing in further deeper in the sea and the need for different kind of nest for fishing different kinds of fish.

c) The changes in the rate of fish are due to starting of producer group by the NGO (FiSH-MarC), increase in the number of buyers, development of export market, the decrease in the number of middlemen between the fisherfolk and the buyer and the spread of awareness between the

fishing communities.

4. Role and impacts of fishing mode

The change in the type of fishing net used had led to additional expenses for the community and at times they are also indebted to the businessmen as they have to lend money for buying new nets. Due to all this additional expenses, the expense of fishing has also increased.

a) Before the fisherfolk started dealing with the buyers themselves, there was a lot of problem from the side of the middlemen. The middlemen forced the fishing communities to finish their prior commitments and opposed their direct linking with the buyers. Other than this, the fishing community were also pressurized and threatened in many other ways not to get directly linked to buyers.

b) The middlemen forced the fishing community to finish all their debts and there were fisherfolk with more than 1 lakh rupees as debts who were forced not to sell their catches to the buyers unless they paid their debts. The middlemen forced the communities to repay all their debts at once and did not allow them to pay it in installments.

c) As the communities started to grade and add values to their products like sorting cleaning etc. to cater to the outside market, they were threatened by the middlemen that in future even if the fishing community wanted to, the middlemen would not buy their fish, if they sold it directly to the buyers.

d) The fishing community was afraid that if in future there is some problem, the local middlemen would not help them and they might have to sell their products at very low prices so they were very apprehensive in dealing directly to the outside export market.

e) Even when the youth of the communities wanted to use new technologies to improve the fish production to cater to the market demands, they were not supported by the elders in their respective houses as the elders were afraid that if this doesn't work, they will be doomed and will have nowhere to go as the middlemen were turning hostile towards them.

f) Due in uncertainties in fish production no one is sure what their catch would be, this led to lot of apprehension in the community. As regular income is not always assured in the markets due to uncertainties in catch, the fishing community depended on the local buyers and middlemen for most of their day to day monetary needs and used to take a lot of debts from them to fulfill their needs. This economic dependency on the middlemen made the communities a bit reluctant and in the beginning days, they were not very eager to deal with the markets directly afraid that the middlemen will turn hostile and would not help them in future.

5. How the solutions were found?

a) As the fishing communities have come together to ask for their rights and are united on many coastal issues important for coastal area and their right to sell their produce at fair prices. They are also getting internal and external support and their strength as a group has also increased.

b) The organisation also fighting for their right and raising voice against injustices done towards them

c) As the younger generation is well informed of the opportunities and risks of market they are confident and take decisions that benefit their community.

d) Communities came in touch with a lot of government and nongovernment organisations during the rehabilitation after the earthquake thus their relation and information regarding the outside world increased. The communities with continuous support of some committed NGOs took a lot of exposure visits and trainings about best practices and their right. This has spread awareness among the communities and brought changes in their behavior and perceptions

e) The fisher folks themselves discuss and resolve their problems.

f) Since the beginning when fishing by boat started, the fishing communities were indebted to the local middlemen. So even if they got low price for their catch they did not raise their voice. Slowly people came together to get the right price for their produce.

6. Policy proposal

Suggestions for improving opportunities in fishing and for ensuring the well-being of the fisher folk.

A. Need for improving the quality of production

If we look at the quality of the fish being produced and the rates that the fisher folk get for it, we can see that there is much scope for improving the quality of production hence improving the price too. For e.g. if the fish mendleli (golden enchori) was washed and preserved properly, they can fetch much higher rates than they do now. Similarly other fish too, if cleaned, sorted and preserved

properly can fetch much higher rates. The fisher folks don't use ice to preserve even pamphlet, which decays very fast. Due to this, by the time the fisherfolk reach the land the pamphlets get bad and fetch only 1/3 price.

The Kutch coast area has abundant of Jumla fish but the rates during its peak production seasons is very low. As the fisher folks get in an annual contract with the middleman to ensure reasonable income,

they cannot preserve Jumla fish and sell it later when the rates are high and productivity is low.

So if the fisher folk keep the fish in plastic bags and dry them properly when there is enough moisture, they can ensure much higher rates than what they get in their annual contracts. Other than this, the industrialization along the cost has also impacted the fish production to a great extent. For this too, the coastal communities and organizations will have to make efforts to ensure that the coastal environments are preserved and safe guarded.

B. Need for social changes

Due to increase in income in the fishing community there has also been an increase in wasteful expenses. Because of this during the social functions people compete with each other in showing off their wealth. At a few places where the youth have taken steps to stop these practices, there have been visible changes in the behavior of the society. A very evident example of the same is hosting of mass marriages due to which the expenses of the individual house hold have decreased drastically.

In the coastal areas were there area self-help groups (SHGs), the fishing community women have joined these groups and have added to the household incomes through the SHGs enterprises. If more such SHGs are formed in the area, there are possibilities of much larger positive changes in the social behavior of the community. Literacy rate amongst the women is also very low in this

community. The number of the children enrolled in the school from this community is also very low and their dropout rate is very high. Child marriage is prevalent in the community and most of the girls are married off at early age and become mother in their early teen only. This often leads to malnutrition and other complications for both the mother and the child leading to poor health. If

efforts are made to raise the education level of the community and malpractices like child marriage etc. are stopped, it will lead to positive changes in the society, leading to their betterment.

C. Importance of Education for the Society

The literacy rate among the fishing community is low and most of the children do not go to school. Seasonal migration of the families to port areas for fishing also effects the education of the children as they drop out from the school to migrate with their families. A lot of organisations are making efforts for educating these children at

the port. However, this does not ensure 100% literacy amongst the children. If efforts are made by the government to enroll them in government

schools and provide them hostel facilities so that they can stay back in the village even if their families migrate, there are possibilities that less children will drop out and more will stay back and continue their studies. Girls within the families are often made care takers of their siblings while their parents go fishing and thus are not able to attend school. If the government and the non-government organisations take steps for providing crèche facilities to these families at the

port, and efforts are made to educate the young girls, they might be able to attend school and pursue their studies. If the youth of the community also take steps towards these causes, there are chances of improving the education status of the community. Efforts should also be made to educate the community about the rules and regulations regarding the coastal area, the impacts of industrialization and the opportunities within the fishery industry so that they become more informed of the opportunities and threats around them and make efforts to secure their livelihoods and safeguarding their environments.

Exposure visits and conducting trainings could be a useful medium for spreading awareness amongst the people.

D. Need for Safeguarding the Coastal Ecology

The coastal environment and areas have always been important for the fishing community more so in today's times when the fish production is decreasing day by day, due to several factors, mostly man made. To safeguard the marine ecologies and coastal environments, the communities, government and NGOs all should come together and take steps for reducing the pollution and other

harmful activities so that the areas vital for the fishery industry are well conserved.

E. Need for Organized Industrialization

In the name of development, a lot of unorganized industries have come up on the coasts leading to pollution and destruction of coastal flora and fauna. To check this, industrialization needs to be made more organized and compatible with the traditional livelihoods (like fishing) of the communities residing in these areas.

FINAL CONCLUSION

This collection of stories dealing is evidence of the ability of peasant family farmers across the planet to resist and be successful even with poor support or, in some cases, despite non favorable public and private policies that are detrimental to them, especially in relation to access to resources, the dominant market, violation of human rights, collective rights, etc.

Beyond resistance, peasant family farming is a major driving force for change and innovation in agricultural and food systems and rural society. The contribution of peasant agriculture beyond food security is to provide alternatives that deal with central aspects of the current structural crisis: sustainable natural resources management; environmental protection and job creation; maintaining agricultural production in contexts that are extremely difficult; maintaining rural spaces that are livable, socially cohesive and rich while encouraging

participation in conflict management (land, forest, water, fishing area, etc).

"... *Modern marketing is without difficulty for modern production. Attempts to transplant a Marketing System developed to handle the output of Specialized Commercial Farmers into a rural community quite different in character and outlook, may only lead to difficulties....* "- (FAO, Rome – 1958)

"...when family farmers enter the commodified market they become part of a commodified chain, losing autonomy and control of the resource base, local markets and jobs..." (**"Family farmers for sustainable food systems: A synthesis of reports by three African farmers' regional networks on models of food production, consumption and markets."- EUROPAFRICA , 2013)**

"...Outside of the commodified market family farmers seek to build markets that are within the democratic control of the people, that respect nature and promote livelihoods. If policy makers could recognized and strengthen the broad range of invisible trade systems and structures that are, thus far, still strong within Africa, this could support creating an alternative to the commodified market that can better serve the needs of the people. .." (EUROPAFRICA, 2013)