Social Sciences Group

Rural Development Sociology

Organic Cotton in Peru: Why do farmers convert?

Confronting Agro-ecology principles with smallholders' reality

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Summary

As an alternative to the negative effects of the globalisation of agricultural production, trade and consumption, certified organic agriculture has been developed in both Northern and Southern countries. It comes from agro-ecological principles which advocate a greater autonomy at the farm level. At the same time, the idea is to include the social and environmental values of products on the world market, by premium prices . As most of the organic standards were set by Northern countries, claiming to help smallholders in the South to improve their livelihood situation, one can ask about those smallholders actual perceptions of organic farming projects.

This master thesis in rural development sociology, studies the case of organic cotton in Peru. Cotton is a particular crop because it is not eatable and therefore has a smaller organic market than food, and also because it is an historical (colonial) export crop. There are two projects with different agro-ecological and socio-cultural context. In the high jungle of Peru, farmers have been bypassed by the Green Revolution and grow native brown cotton, organically by default. Their organic certification was paid by a European importer, interested in ecological fibre. On the arid coast of Peru, farmers have benefited and suffered from the Green Revolution and organic certification means much more changes in terms of practices for them. An international NGO started this organic cotton project to build a whole sustainable textile chain at the world level.

By analysing the reasons why cotton farmers convert to organic agriculture, this research shows how discontinuities occur between agro-ecological principles and smallholders' reality. Organic shift doesn't necessarily decrease farmers' dependence on physical elements (external inputs, credit), nor on social ones (expert knowledge in pest management, contacts with buyers, etc.). Generally speaking, organic development hasn't resulted in more farmers' empowerment in terms of social organisation and capacity-building. The private companies and NGO's involved are not able to diminish smallholders' vulnerability on the world market.

Between the organic discourse and organic cotton practices in Peru, we have found some partial connections, mainly due to market uncertainties and to the socio-cultural context of Peru, inherited from former big "*haciendas*". This research aimed at constructively criticise organic agriculture in Southern countries. However, it acknowledges that agro-ecology can offer good alternatives to globalisation, not only for certified organic farmers.

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List of abreviations

ANPEP	*Asociacion Nacional de Productores Ecologicos del Peru*, Peruvian ecological producers association
APROCUM	*Asociacion de Productores Organicos de la Cuenca del rio Mayo*, Organic producers association of low Mayo valley
CEDISA	*Centro de Estudios para el Desarollo e Investigacion de la Selva Alta*, Study centre for research and development of the high jungle
CONAPO	*Comicion Nacional de Produccion Organica*, National comission for organic production in Peru
EU	European Union
FAO	Food and Agriculture Organisation
FFS	Farmer Field School
FONCODES	*Fondo de Compensacion y de Desarollo Social*, Peruvian Compensation and social developement fund
IFOAM	International Foundation of Organic Agriculture Movements
IMO	Institute for Market Ecology (Switzerland)
INIEA	*Instituto Nacional de Investigacion y Extension Agricolas*, Peruvian national agricultural research and extention institute
IPM	Integrated Pest management
MAKS	Management of Agro-ecological Knowledge and Social change
NGO	Non Governmental Organisation
PAN	Pesticides Action Network
RAAA	*Red de accion en Alternativas al uso de Agroquimicos*, Action network for alternatives to agro-chemicals in Peru
RAAKS	Rapid Apraisal of Agricultural Knowledge System
RAE	*Red de Agricultura Ecologica*, Ecological agriculture network in Peru
SENASA	*Servicio Nacional de Sanidad Agraria*, Peruvian national agrarian health service
SGS	*Société Générale de Surveillance*, General Society of Monitoring (Geneva)
SIB	Small Is Beautiful (British NGO)
US$	United States Dollars
USAID	United States Agency for International Development

Introduction

World globalisation is bringing new connections between actors who can be physically far away, through trade and new technologies of communication and information. Commodities and information flows are going faster and further every day. Within the mist of the world market, agricultural products don't make an exception and farmers, processors, traders and consumers evolve in a rather unstable system, in order to adapt to market changes. In this unstable system, farmers are the most vulnerable ones, as their activity is linked to longer term bio-climatic phenomena. Market demand for grain or meat may change every day on stock exchanges but still, it takes a few months to grow wheat or to raise cattle. While most Northern economies have been protecting their few technically advanced farmers by subsidies and market regulations, most of the smallholders from Southern countries just have to cope with market uncertainty, in addition to climatic, political or economical ones.

Since the 60's, the Green Revolution has been implemented in Southern countries especially, attempting to reduce uncertainties, by high yielding varieties and massive use of pesticides. This intensive agricultural development has had good results in terms of productivity, but very bad impacts on natural resources (soil, water, ecosystem) and on farmers' economical situation. Moreover, those technologies haven't reached all poor farmers in the South, as many of them make their livelihood under conditions where agricultural standardisation can't work. So international co-operation for rural development has changed its strategy towards locally embedded technology, in relation to the particular ecosystem (Integrated Pest Management) and to a particular socio-cultural context (giving importance to local knowledge and farmers' participation).

In this movement, organic agriculture has developed in both Northern and Southern countries, to propose an environmental friendly alternative to industrialised agriculture, for both farmers and consumers' well-being. Many researchers see this alternative development as an interesting way to re build the link between agricultural production and consumption, because it gives a meaning to agricultural products, therefore not only characterised by their competitive prices on the market.

Certified organic products are usually more expensive to buy, but it is justified by the guaranty of food safety for the consumer, environmentally sound practices for the producer and, more recently, a growing concern for social considerations. In parallel, the Fair Trade movement has already developed an alternative to inhuman conditions of international trade globalisation. Nowadays, Organic and fair Trade institutions tend to work together, at least to recognise each other's standards and requirements for certification.

Growing concern for social aspects in organic agriculture comes from the emergence of new actors in the organic chain, not necessarily as deeply committed to an ecologist ideal as the "pioneers", but more interested in a market opportunity, as world demand for organic products had grown faster than organic supplies.

As a student from Wageningen University (the Netherlands), I got to learn a lot about organic agriculture and its desired positive impacts on smallholders' livelihoods. Indeed, many students and teachers are socially and environmentally aware consumers, who want to know the story of the agricultural products they buy. As a MSc student in Management of Agro-ecological Knowledge and Social change, I am one of them. However, I gradually started to question the obligatory positive image of certified organic products. How do farmers perceive organic agriculture in the South? I had the feeling the standards for certification were mainly set by Northern actors, for the sake of farmers' livelihood improvement in the South. Aren't we deciding what is good for them on their behalf? I have chosen the topic of this thesis

because I wanted to contribute to sustainable agriculture development in the world, by looking at an organic farming project in the South, with a critical constructive view.
So I arrived in Peru, expecting to be surprised or even shocked by smallholders' reality, and its disconnection with what I could read and hear in Wageningen about organic agriculture. And this was actually what happened, although I could not imagine what I have found. But I need to warn my readers from the beginning: this is an unexpected story you are going to read. First of all, if you were already dreaming about the Andes, Quena music, Incas ruins, llamas and condors when you read "Peru", I am sorry to tell you this is not where cotton grows actually. So let's discover the two other "countries within the country" of Peru: the Arid Coast and the Tropical Jungle.
Those two regions illustrate quite well the range of Green Revolution impacts in the world. Jungle farmers have been bypassed by agriculture intensification, whereas Coastal farmers have benefited and at the same time suffered from it.
Maybe when you saw this research was done in Latin America, you immediately thought about unfair land distribution and the urgent need for a land reform. It was done in Peru in 1970, by the populist dictator, General Velasco, after his coup, but more for the sake of getting rid of landowners' oligarchy than to redistribute land, and therefore chances, among small farmers in a more egalitarian way. So, one generation later, we can still see the consequences of giving the land to who is tilling it, without any preparation, nor support from the State.
Unexpected are also farmers' perceptions of organic farming and the consequences of shifting to organic on their livelihoods. We can see how autonomy in terms of inputs, capital, knowledge and decision making, as it is advocated in Agro-ecology literature, can be somehow compromised by local conditions and history.
Unexpected is the crop we study: "organic cotton? What for? We don't eat it!" usually say customers in the North. Who thinks about all the poor farmers in the world who spray their cotton fields without any protection and who sometimes get intoxicated?
"Cotton in Peru?" Yes, and even some naturally brown native species from the Amazonian forest! When Spaniards saw them for the first time, they thought Indigenous people had dyed them and put them back on cotton trees to dry!
That is what happens when one observes and interprets without asking actors in the field how they explain it. Therefore, I wanted to go into the cotton fields, to ask farmers why they had converted or not to organic cotton production. As it is unlikely they would answer directly to the "Spaniards" in a language they could understand, it took me 5 months there to learn how to observe, to participate and to exchange with them.

I chose for a qualitative research method and I will present two case studies and then make a crossed analysis of them. But before that, I will first present some elements of the background, my research problem and objectives. Secondly, the theoretical basis of this research will be exposed with the research questions, followed by some previous research results on the topic and the methodology used.

Chapter 1: Background, research problem and objectives

1. Organic agriculture development in Southern Countries

In the context of globalisation of food production and consumption, organic agriculture has been developed both in Northern and Southern countries. In the case of southern countries, most of the certified organic products are exported to richer countries where populations can afford the higher price and feel concerned about environmental and social issues of agriculture. "Growing consumers' concerns about quality and food safety have opened possible markets for developing countries' exporters, enabling them to enhance foreign exchange earnings and diversify their exports. Price premiums of between 10-50 percent over prices for non-organic products, as well as more secure markets for organic commodities, can help counter-balance the loss of preferential trade arrangements, falling agricultural prices and withdrawal of government support to agriculture inputs and other services" (FAO 2002). However there are also some social aspects related to those economical ones. The organic sector often involves a network of farmers' cooperatives or associated corporations, certification bodies, outside advisors, marketing organisations in consumers' spaces (solidarity or organic shops, retailers). According to their discourse, they aim at enhancing ecologically and socially sustainable agricultural production and livelihood. "Organic agriculture is a whole system approach based upon a set of processes resulting in a sustainable ecosystem, safe food, good nutrition, animal welfare and social justice. Organic production therefore is more than a system of production that includes or excludes certain inputs." (IFOAM 2002, Basic standards, quoted by FAO 2002). Organic agriculture is also based on environmental economics, which, as Arce and Marsden (1993) point out in their analysis of commoditisation of international food, have tried "to value externalities, making them internal costs for future development, (…) in order to provide better guidance for public decision". Externalities of agriculture are threats on the environment and on the smallholders' welfare situation. In this context, organic standards and certification have been organised by western agents, with an explicit goal to protect the environment and help small farmers to better their livelihood. However, one can ask what are the actual consequences of organic agriculture on local social organisations and farmers' representation of globalisation. As Wageningen group argued (Arce and Marsden 1993), based on Long's actor-oriented perspective, there is a "need to consider the views of actors experiencing these changes", e. g. to study "active participation of peasantry in different processes of commoditisation".

2. The need for more social considerations in organic agriculture

Miguel Altieri (1992) has written numbers of papers and books about Agroecology, seen as a desirable future of rural development in Latin America. Agroecology is a sustainable approach of farming, based on autonomy, local knowledge and diversification. It includes certified organic agriculture, especially for export production. More recently, Altieri (2003) has advocated for higher social consideration in organic agriculture standards and principles, as a reaction to increasing large scale and capitalistic organic farming on the global market. "There is no question, organic agriculture must be both ecologically and socially sustainable. For this to happen, organic techniques must be embedded in a social organisation that furthers the underlying values of ecological sustainability" (Altieri 2003).
But in order to set consistent social standards, we first need to know what are the actual consequences of organic agriculture on social organisation. Moreover, we have to define what is meant by social aspects and which ones have to be taken into account.

3. Organic cotton development

Cotton is the major textile fibre traded in the world. It therefore plays a very important role in many Southern countries' economy and small farmers' livelihood. Conventional cotton production has had many bad consequences, in terms of pest resistance, farmers' health (most of the cotton producers in the world are smallholders who spray without personal protection), soil erosion and water scarcity, in case of irrigated cotton production systems. In order to fulfil the increasing demand from the market, this crop cultivation has been intensified a lot and it corresponds nowadays to 25% of pesticides use in the world. That is why the idea of organic cotton production came out: "Amongst the catalogue of problems associated with conventional cotton production, excessive use of pesticides is perhaps the most serious and is the main motivation for many people and organisations to seek changes in current production patterns." (Myers and Stolton 1999)

First attempts to grow organic cotton have been developed in Turkey in the late 80's, by an organic farmers' co-operative. Then it started in India, Peru and Sub-Saharian Africa as well. The fact that it first started in Southern countries highlights existing socio-economical problems in cotton production as well. Many small farmers in the world depend on cotton for their cash income and are highly dependent on the world cotton market. With fashion versatility and economical dumping from Northern cotton producers such as the United States, uncertainties of the world cotton market were also a reason to look for alternatives. That is why both export companies and development agencies have worked to develop various projects in Southern countries. However, the United States are now the biggest producer and consumer of organic cotton, as farmers have adapted to the national market demand for ecological textiles.

Moreover, as Myers and Stolton (1999) put it in their book on organic cotton production chain, the major environmental impact of conventional cotton is in processing, more than in agricultural production. So it is clear that organic cotton can make a difference in terms of sustainable products if it is more than just cotton without pesticides. Thus, within the organic agricultural developement, cotton especially requires more social consideration on the whole chain. It is a clear case where organic certification should mean farmers' and consumers' well being is taken into consideration.

Organic cotton. was proposed to be studied by the RAAA as they had already done quite some research on it, on a more agronomic side and therefore had many useful contacts in this branch. More explanations about this choice will be found in the methodology chapter. Organic cotton is a particular case in organic agriculture in general and in the Peruvian context we are going to present it now.

4. Specific problems of organic farming in Latin America and in Peru

Latin America has the second largest amount of organic farmland in the world with 5.8 million hectares, however it has a small internal market for organic products. Most of the organic farmland is used to produce organic products for the export market with about 10 percent sold within the region. The region is an important source of high quality organic fresh produce to northern hemisphere countries, especially to the United States and Europe. Sales of organic food and drink were estimated at US $100 million in 2002. Most demand is in the big cities, especially in Brazil and Argentina, which are two of the leading organic producers in the region. Increasing consumer affluence and growing awareness of organic products are stimulating consumer demand for organic products. (IFOAM 2004)

“In Latin America, the major environmental problems associated with agriculture are soil erosion, pesticides pollution, deforestation and genetic erosion, all processes linked to overexploitation of natural resources. This overuse is a consequence of poverty and/or massive transformation and perturbation of the environment in areas subjected to export agriculture or recent colonisation. (…) There is a strong link between rural poverty and environmental degradation.” (Altieri 1992). Although organic agriculture is said to find sustainable solutions to those issues, one can ask to what extent organic agriculture principles match with smallholders’ life strategies in the field. In the Latin American context, Peru is a developing country with an important diversity of environments, threatened by globalisation and growing poverty, so intervention needs support from research. Some Peruvian smallholders have been bypassed by Green Revolution and remain close to organic farming principles, but certified organic agriculture is still in its first stages. Thus, in the specific case of Peru, the chosen general problem to study is : What are the discrepancies between organic farming principles and smallholders’ realities?

According to IFOAM(2004), Peru had 84,908 certified hectares in 2001, and there were more than 130,000 hectares under certification in 2003, more than 20,000 farms, most of them small and indigenous, producing coffee and cocoa under the internal control system. Beside the fact that Peruvian authors may find it over estimated, all agree that the certified organic area is growing since 2001 (Chavez et al. 2003). 97 percent of the production is exported, and 94 percent of those exports are coffee and cocoa. Banana is also a growing export. The exported value is around 30 million US$. Other exported products are quinoa, cotton, pecan nut, Brazil nut, onions, asparagus, sesame seeds, amaranths, and tomato (IFOAM 2004). In 2002, Chavez et al. have found 365 ha of certified organic cotton, when organic coffee had almost 29 000 ha certified, to have a proportion in mind. Cotton is therefore still at a pilot stage in general organic development in Peru.
Although internal market amounts to only 3 percent of the production, it is very well organised, thanks to the work of the Peruvian organization Eco Logica. There are weekly fairs in the Lima rich neighbourhood (Bio Ferias); there are home deliveries (Bio Canasta), small shops and defined areas in the supermarkets (Isla Ecológica). These distribution channels move around half a million dollars yearly. The main products sold on the domestic market are: Vegetables (43 per cent), fruits (41 per cent), beans (9 per cent) and root crops : potatoes and sweet potatoes (7 percent).Organic cotton clothes are almost not sold locally.

There is a local certification agency, “Inka Cert” that – together with other Latin American certifiers – formed the “*Bio Latina*” agency, which is accepted by the EU. The inspection body “SKAL”, the Institute for Market Ecology (IMO) and SGS Peru have offices in Lima. Since 1998 there is a National Commission for Organic Production, CONAPO, which unites the private sector, scientists and the governmental sector. In 2003, an on going very long consensus process has led to a first National Regulation. In August 2004, the Peruvian branch of Pesticides Action Network (RAAA) organised a discussion forum about its application. But still many points need more elaboration and discussion, such as the conversion period, seeds origin, distance and buffers between organic and conventional fields, etc.
In organic agricultural research, the Agrarian University of *la Molina*, in Lima, has done some works, especially on organic vegetables. Some NGO’s and networks of institutions and actors, such as the RAAA (*Red de Accion Alternatives al uso de Agroquimicos*) an applied research organisation on alternatives to agro chemicals, including organic agriculture also support organic farming development by doing applied research.
In Peru, organic farming has started in the early 80’s in the northern highlands, supported by NGOs. Then organic coffee was developed and an also experimental vegetable farm near

Lima. Organic farming went on growing in number of producers, gathered in an organic farming network (RAE) and in a national association of organic producers (ANPEP). But still, social organisations remain quite weak (Alfonso Lizarraga, from RAAA, 2004 Personal Communication).

5. Research objectives

As presented in the background information, more research on the social aspects of organic development in Peru is necessary, in the context of growing world considerations for social sustainability of organic production. This research aims at contributing to this particular need. Indeed, the RAAA has never done any social research before and was highly interested in this project.
The purpose of this research is to contribute to the development of organic agriculture in Peru, by helping local NGOs to understand local small farmers' perspectives about organic production. It will address the specific issue of consistency between organic organisations objectives and farmers' perspectives, realities and life strategies.

Therefore, the objectives of this research are :

1) to understand the actual standpoint of those local organic organisations about their understanding of farmers' situations and their objectives.
2) to analyse smallholders' strategies. This will be done by investigating the reasons why smallholders engage or not in organic agriculture.
3) To compare local organisations and farmers' perspectives.

By investigating the reasons why small cotton farmers in Peru choose to farm organically, this research aims at contributing to a better co-operation between local farmers and organic agriculture organisations. A better co-operation means shared goals and mutual understanding of respective strategies. It also fits with the need to explore the possibility of more social aspects of certification, by trying to assess the existing social consequences of organic farming, for vulnerable small farmers. This research is meant to help organic farming promoters to adapt their strategies to local farmers' perceptions.

Chapter2: Theoretical basis and research questions

1. Theoretical Background: Agro-ecology paradigm, organic agriculture programs in the context of modernisation of world agriculture.

In this research, we assume that organic agricultural development is desirable in Peru, especially in order to tackle environmental and social problems for smallholders. This approach is based on Altieri's Agroecology, "a new research and development paradigm for world agriculture" (1989). Agroecology has been proposed as a new scientific discipline that defines, classifies and studies agricultural systems from an ecological and socio-economic perspective. Emphasising on a global approach of a particular farming system, agroecology links technological issues with the political agenda, incorporating social and economic elements in its development strategy. How does agro-ecology paradigm, enounced by Altieri, integrate world agriculture modernisation?

We can characterise Green revolution as a 'modernisation', described in the introduction of Arce and Long's 'Anthropology, Development and Modernities'. "We try, wherever possible to differentiate clearly between 'modernity' as a metaphor for new or emerging 'here-and-now' materialities, meanings and cultural styles seen in relation to the notion of some past state thing (…)and 'modernisation' as a comprehensive package of technical and institutional measures aimed at widespread societal transformation and underpinned by neo-evolutionary theoretical narratives. Whereas modernity entails self-organising and transforming practices in different strata and sectors of society, modernisation is normally a policy initiative undertaken and implemented by cosmopolitan administrative and technological elites (national or international)." (Arce and Long 2000)

Indeed, scientific and political elites have set up a world wide program to widespread Green Revolution high yield varieties, pesticides and chemical fertilisers in agriculture. In this context, some other elites have come up with agro-ecology as an alternative to Green Revolution, and its negative side effects. One expression of this agro-ecology paradigm is the development of certified organic agriculture in Southern countries. Is this a 'counterwork of modernisation', as Arce and Long call it?

"The notion of counterwork can also be applied more generally to rethink how one might understand how multiple modernities are generated. Counterwork against and within modernity is embedded in particular histories and situations that are part of the wider process of Western expansion. Studies of such counterwork can inform us about the tendencies of modernisation, of which they are of course an integral part. In other words, it helps us to understand the re-organising processes that arise with the expansion of the West and the significance of counter-tendencies for those who experience these 'new realities'." (Arce and Long 2000)

In this process of "multiple modernities", agro-ecology paradigm claims its origins in 'traditional' agricultural systems, autonomous in inputs and locally embedded, in terms of ecosystem and culture. Altieri (1989) talks about "a wise combination of traditional and scientific knowledge about farming and ecosystems" which makes agro-ecological paradigm a counterwork indeed. Moreover, we can say organic agriculture is a counterwork of agricultural globalisation, as it needs a certified alternative circuit from producers to consumers. However, this is still part of Western expansion, as this study's attention to organic agriculture and dependence tries to show.

As we have seen in these multiple modernities and counterwork development, organic agriculture can be seen as one of those low inputs technologies, meant to develop sustainable agriculture. Therefore, it has to match the four characteristics of socially equitable technology, enounced by Altieri(1989):

1) High level of farmers' participation, so they can influence the political and research agenda
2) Cultural compatibility, with a wise combination of traditional and scientific knowledge about farming and ecosystems
3) Ecological integration, with a diversification logic, for a better equilibrium and stability
4) Economic viability, with low farmers' dependency on the state and industry.

However, in the field, one has to face reality that especially cultural compatibility appears to be difficult e.g. the integration of organic farming requirements into farmers' existing knowledge, practices and culture. In addition to this, economic viability and especially the issue of low farmers' dependency on the state and industry has become a crucial point to analyse farmers' choices toward organic agriculture. Indeed, in different organic chain actors' representations, there exists a gap or discontinuity between, on one hand, an international market oriented strategy for smallholders, through premium prices and niche market and, on the other hand, a self-provisioning strategy to maximize agro-biodiversity, in order to insure farming systems' resilience. This discontinuity in the field of the low external inputs agricultural system is made explicit through the name of local organisations, some being called "organic" and others "sustainable" or "agro-ecological". That is why it is important to study what language is used by whom, in the different discourses on organic cotton in Peru.
In order to understand discontinuities in "the blending and juxtapositioning of elements of modernity (science) and tradition in the creation of various modernities", Arce and Long use "Strathern's concept of 'partial connections', whereby people, ideas and representations of space and time are interconnected but are never totally symmetrical or fully integrated." Those partial connections occur in certified organic projects, where farmers, NGOs and private companies exchange money, commodities (cotton in this case), knowledge and information, sometimes in a conflictive way, and not without any power tensions.

To summarise the theoretical background of this research, the four characteristics of socially equitable technology in agro-ecology will be compared to the farmers' situation and their reasons to convert to organic. We already highlighted some possible discontinuities between different discourses and strategies in practices. Those discontinuities will be analysed based on multiple modernities and partial connections (Arce and long 2000).

2. Conceptual Framework: through which glasses do I look at reality?

When describing everyday social events, in a society not our own, perhaps we shall see how easy it is to commit ourselves to interpretation before knowing what we are doing. In his book "the Human Group", George Homans (1951) proposes a way to analyse social events, based on three elements of social behaviours: activity, interaction and sentiment. "Status, role, direction, control, subordination, authority. We all use some of these words ; we think we know what they mean and they all do mean important things. But carefully examined, they seem to refer to complicated combinations of our simpler elements: activity, interaction,

sentiment." He finds classification a useful tool for sociologists to decide whether a minimum of important facts have been gathered. "Any classification, no matter how crude, provided it is used regularly, forces us to take up one thing at a time and consider systematically the relation of that thing to others. This is one of the roads that lead to generalization." (Homans 1951). Those three elements of social behaviour and the use of classification are relevant concepts to be used in my research on farmers' choice toward organic or not. Indeed, a choice can be analysed in terms of activity, interaction and sentiment. This leads us to the research questions with which I gathered my data about farmers' choice for growing organic cotton.

3. Research Questions

The main research question is:
Why Peruvian cotton smallholders convert[1] or do not convert to organic cotton farming?
Reasons can be of different kinds, one can expect economical, agro-environmental and social aspects to be inter-related. Our research pays special attention to social aspects.
Following Homans' classification, our sub-questions are:

1) Sentiment: What are farmers' reasons to convert or not to organic farming? How do they justify their choice?
2) Activity: What are the actual consequences of organic conversion on their livelihoods, in terms of agro-ecology, economics and socials aspects?
3) Interaction: What are the determinant factors from the context, for cotton smallholders to convert to organic farming? (agro-ecological conditions, market, public and private institutions' attitude, organic network…)

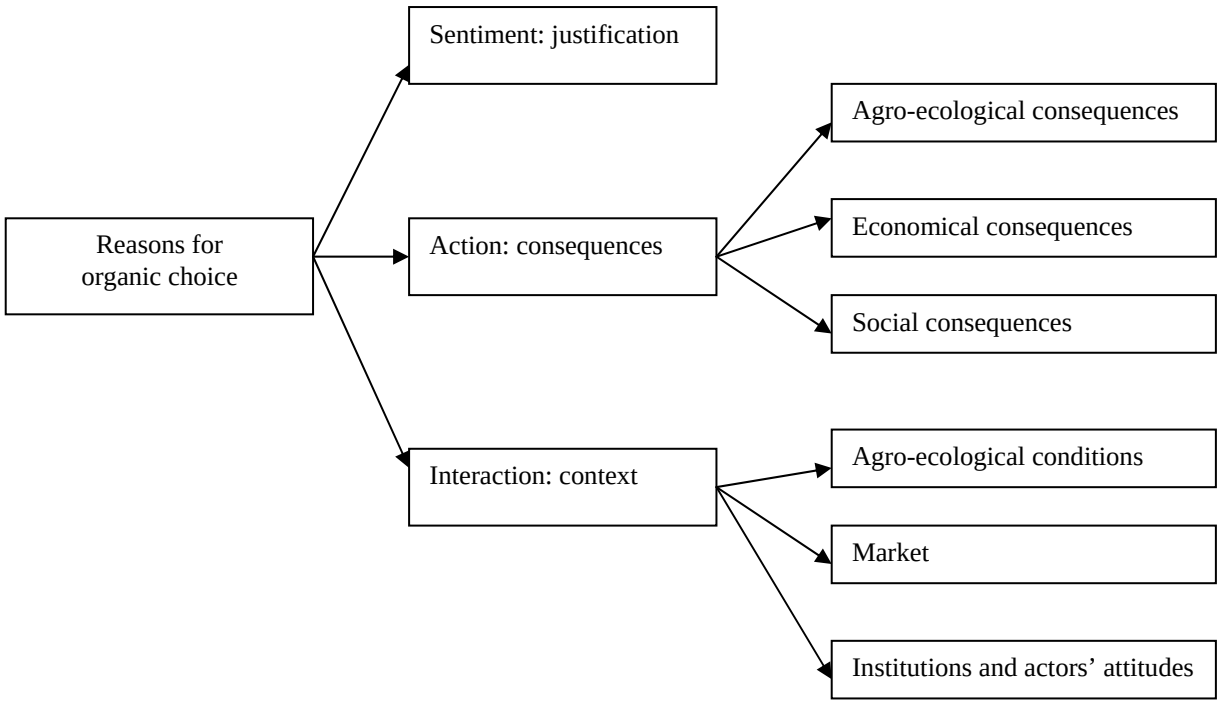


Fig.1 Tree diagram of research questions

[1] The term "convert" has a srong religious connotation. However, it is used in organic agriculture to describe the profound changes that should go along with organic shift.

Chapter 3: Some previous research on this topic

In relation to those above mentioned research questions, some previous research has been published, as part of the on-going debate about social sustainability of organic agriculture world wide. Let's present them briefly and try to link them with our questions.
Ronald Nigh (1997) has studied an organic associative corporation in Chiapas, Mexico and the influence of globalisation on the social organisation. One of his questions was : Do farmers really share the philosophical goals of organic agriculture or are they purely motivated by higher market prices? He found out that, beside this rather dichotomist dilemma, there was a need to understand better the nature of farmers' choice in vulnerable situations, as they can be in the case of smallholders in Latin America.
In a summary of the potential of organic farming in Africa, Walaga (2000, quoted by Parrott and Mardsen 2002), identifies a range of incentives and constraints on farmers' adopting organic practices.

Fig. 2: Incentives and constraints to organic farming

Incentives	**Constraints**
Disillusion with 'Green Revolution' technologies and an awareness of the dangers of intensive agriculture, including resource degradation.	Growing rural populations places traditional forms of agriculture under strain and encourages moves towards intensification.
The (increasing) cost of Green Revolution technologies makes them inaccessible to the large majority of farmers.	The high cost of certification (especially in regard to local wages / incomes) undertaken by outside organisations.
Organic farming draws upon (and valorises) indigenous knowledge.	Low literacy levels in rural areas make record keeping a problem.
The influence of the environmental and development movements has led to organic systems being introduced to combat erosion and desertification.	Lack of trade liberalisation in some countries prevents development of export markets.
Growing awareness that international organic markets offer premia and the opportunity for farmers to increase incomes.	

From Walaga (2000), quoted by Parrott and Mardsen (2002)

Among those incentives and constraints, our research especially pays attention to indigenous knowledge and the environmental and development movements' influence in Peru, in terms of incentives, and the lack of literacy and knowledge, concerning the constraints. Indeed, the debate on whether organic farming can benefit from indigenous agro-ecological knowledge is still going on. "There is a wide range of different pre-existing knowledge levels of organic and agro-ecological approaches, which are likely to be both process and culturally specific. It is certainly not possible to generalise about either a wealth or an absence of indigenous knowledge. However, it would appear that in many circumstances, lack of knowledge, inadequate training and lack of extension facilities act as major constraints to organic development. (Parrott and Mardsen 2002) What about the Peruvian situation ? Does organic

agriculture benefit from existing indigenous knowledge or is its lack a major threat? This relates especially to Homans' interaction, in analysing social behaviours.
According to the authors, another important issue related to organic development, which is by the way linked to Homans' activity, is the higher required labour. Recent studies by IFOAM and FAO (Parrott and Mardsen 2002) showed that this was not necessarily the case. Adoption of organic methods can even generate new employment, if the existing farming system has a rather low degree of intensity. Among social and cultural issues discussed in this organic farming in the South report, security of land tenure is pointed as a significant factor influencing farmers' ability to have a long term view, as required by organic and agro-ecological practices. Does land tenure influence Peruvian cotton farmers in their ability to have a long term view on their agro-ecological system? Are there other factors? Those questions concern Homans' interaction in understanding farmers' social behaviours. Last but not least, gender issues are raised, as women represent an important potential for organic development, although local culture may not allow them to take enough responsibility and autonomy, to engage in certified organic farming. What is the room for manoeuvre of Peruvian women farmers in the decision process related to organic farming ? Is their actual social position a threat to organic farming development? Could they be empowered or emancipated through organic farming development? Again, we find Homans' activity analysis in those questions.
As Nigh, Parrott and Mardsen ask the following question, in terms of Homans' sentiment: Are farmers driven solely by economic necessity? Will organic management prove to be a short-term palliative that is abandoned for more conventional practices later? For many in the organic movement, increasing the number of certified organic farmers in the world is not as much important as promoting a more holistic view, based on economic and ecological self-reliance. One key to this endeavour is to strengthen social capacity and self-confidence. Can organic cotton development fulfil this objective in Peru?

More recently, Parrott (2004) has characterised small-scale mixed farming conversion as requiring fewer change in farming techniques than plantation crops. However, small farms conversion implies significant organisational changes in linking farmer groups with (international) markets and enabling them to comply with market requirements and organic standards (interaction). This suggests indeed that social aspects can be determinant in farmers' choice to grow organic or not. "Indeed, many small farmers reject the use of chemicals, hybrids and industrial farming techniques not for economic reasons but because they do not fit with their "farming style" or their cultural repertoire(sentiment). The question here is at what point does a traditional farmer, employing local or imported knowledge of ecological strategies become an organic farmer?" This question highlights again the possible discontinuity between market oriented and self provisioning ecological strategies in organic development.
In his future research agendas, Parrott (2004) writes: "it is important to develop better understanding of the economic, environmental and social implications of organic farming. What mechanisms are more successful? What flanking (e.g. side) activities are required? Do the outcomes match with initial expectations (of farmers)? What constraints exist? How much do initiatives draw upon (or draw out) local knowledge? (…) Many grassroots organic experiences are not written down, or may only be written in local languages thus not accessible internationally." This research aims at answering (some of) those questions, in the particular case of organic cotton in Peru, using Homans classification of elements of social behaviours.

Chapter 4: Methodology of Research: How did I actually get my data?

1. General Remarks

Before going to Peru, I wrote a thesis proposal with my research objectives in relation to the context of organic agriculture in Southern countries and to previous research done on the topic. I determined my research questions but I didn't know yet which crop I would study. I tried to find relevant questions to ask myself in the field so that research questions and methodology could be adapted to the crop and the context. One has to keep in mind that most of the time, planning is made in order to be changed during implementation.

The first contact I had in Peru was the RAAA (*Red de Accion en Alternativas al uso de Agroguimicos*), in Lima, a national NGO, working about agriculture and environment, part of International Pesticides Action Network (PAN). This Peruvian organisation works as a network of local NGOs, researchers, teachers and impresarios, interested in alternatives to pesticides and ecological agriculture. Their main activities are research, publication, and capacity building and training. As part of their working themes, organic cotton was suggested to me as suitable for my research on farmers' motivations and perceptions about organic agriculture. The reasons for this choice are mainly that my Peruvian partners had interests and good contacts with organic cotton actors in the country. I knew cotton was a specific case in organic agriculture, because it is not food and it has been an export crop for long time. It could be better to study a more common crop in organic agriculture development in Southern countries, but I chose to take this opportunity to have contacts easily with different actors in the field, which is something precious when coming from abroad for the first time in a country.

Then, I started to compile and read articles and books about organic agriculture, Peruvian cotton and Peruvian organic cotton, mainly from this NGO and from Agrarian University libraries. I was refreshing my Spanish at the same time and when I was confident enough about the language, I met researchers on organic farming and rural development sociology to adapt my thesis proposal to the Peruvian organic cotton case. I have interviewed some retired agronomists who worked with Integrated Pest Management on cotton, before and after 1970's land reform.
With both literature and those first interviews, I could adapt my research proposal to the specific case of organic cotton farmers in Peru. I made a planning of my fieldwork and chose the methods to be used.

Fig. 3: Calendar of fieldwork

August 2004	*September*	*October*	*November*	*December 2004*
Lima	Jungle	Lima and holidays	Coast	Lima and Holidays
-Studying Spanish -Reading -Contacts with key actors -Adapting research plan	First case study: -Reading -Observations -Interviews	-Report redaction -Interviews with key actors	2nd case study: -Reading -Observations -Interviews -RAAKS course and group work	-Report redaction -Final presentation -Web site elaboration

Generally speaking, the methods are qualitative. The idea was to study two different projects, staying at least one month on each site, in order to present the 2 case-studies in the final thesis.
Several methods were used, in the following order :

- participant observation
- informal interviews
- semi-structured interviews

When preparing my thesis field work, I thought I could also do time allocation studies and life histories but I decided not to use those methods in the field. By observing and doing informal interviews with farmers and their families, I got rapidly the point that there were no major differences in workload between certified organic and conventional cotton growing. Then, in my semi structured interviews, I asked some questions about workload and day and season tasks pattern, and their evolution with organic change, but I didn't put much effort in doing a real time allocation study. For life histories, I decided to focus the interview on topics related to organic farming and cotton, due to lack of time, but I will present a few characters and their stories to illustrate my results. The reason why I didn't use life-stories is also because I had to change the focus of my study, from an individual decision-making process to the importance of the context in farmers' decisions, as I heard farmers often saying:
"I converted to organic cotton production because the NGO or company staff came to propose me to join the project."
It was quite a surprise for me to hear that. Then I realised I had a rather "Northern" farmers perspective in mind when studying the organic conversion process, namely an individual choice, with economical and/or ideological reasons. What is different for Peruvian small farmers about that? Well, organic agriculture is not so known among low educated people there, as it is a very minority of Peruvian agriculture. The majority of small farmers are low-educated, indeed, and we will see that some educated ones already knew about organic certification before the NGO would propose it. They can be resource-people in the group then. But generally speaking, organic cotton projects did probably not decrease small farmers' dependence on development programs and international market through private companies. That is why I didn't use life-stories as such. Let's visualise now in a table the different methods used and information got by them.

• Fig. 4: Information obtained by using those methods

Methods	*Type of information*	*topics*	*Unit of study*	*Info that another method would not give*
Participant observation	Tasks distribution Consequences of organic agriculture Contextual factors	Agronomic practices Social organisation of work Social network	Farming household Community Local networks and associations	What do they actually do
Informal interviews	Concept elicitation Priority making	Organic agriculture Farmers' livelihood strategies	Individuals And group interviews	What are farmers' perceptions and priorities
Semi-structured interviews	Reasons, justifications Consequences Tasks distribution Contextual factors Decision making process	Organic conversion Agronomic and social organisations Changes in practices and social network	Farmers Household members Networks and associations	How is work organised Farmers' justifications Combinations of factors and reasons to change

Those three methods are complementary to each other and cross-checking has been made to get a lower bias in my perception and interpretation of the situations I observed. It is also important to make a distinction between what farmers say and what they do or experiment in practices, as there is a general tendency to give normative answers. In order to overcome this tendency, multiple sources of information had to be cross-checked as well.

A situational analysis

In studying the nature of farmers' choice, both structural and individual factors can be taken in account, as it is meant by Van Velsen (1967) in situational analysis. By structural factors, I mean the social and economic context in which farmers make their decisions. By individual factors, I mean farmers' distinct characteristics that may influence their choice about organic agriculture. However, I am aware that the distinction between structural and individual factors is quite blurred in reality. Indeed, interactions between two individuals are the constitutive elements that are building society as a structure.

The importance of language

In comparing farmers' perceptions on organic agriculture with organic NGOs standpoints, narratives analysis will be helpful. Narratives are farmers' parts selections from official (organic or not) discourse, to justify their practices. They are much more flexible and adapted to individuals than discourses. In this case, language is a starting point to give value to practices. As Fairclough (1989) wrote, "nobody who has an interest in relationships of power in modern society can afford to ignore language." By analysis farmers' and NGO's discourses and narratives, on organic agriculture, we can get more insight of the actual influences and power relations between those different actors. Ideology can be seen as a mechanism of power in modern society. As language is the major locus of ideology, it is of major significance with

respect to power. (Fairclough 1989). Then the author proposes a methodology called Critical Language Study, from which this research gets inspiration, with regard to farmers and NGOs use of language during interaction with each other.

Basic definition:
• Conceptual definitions : Organic Agriculture is a whole system approach based upon a set of processes resulting in a sustainable ecosystem, safe food, good nutrition, animal welfare and social justice. Organic production therefore is more than a system of production that includes or excludes certain inputs." (IFOAM 2002 Basic standards)

• Operational definitions : Organic agriculture certified according to Peruvian or international standards

Research units and sampling:
The research units of this research are the farmers, male and female. I also interviewed NGO and extension field workers in the area and villagers who could help me in understanding the organic conversion process.

As sampling strategy, the two cases I visited were defined, with regard to relevancy for this research, access and contacts with the RAAA. I stratified the population in three groups : certified organic, formerly certified organic and conventional farmers (using chemicals or not)and take a sample in the three groups. I used a conventional sampling method, as the population was rather small, in each case. For organic farmers and former ones, I asked local organic cotton projects for a list of their members and former ones. For non organic farmers, I chose them by random in the village, but I tried to find non organic farmers with comparable characteristics with organic ones. But I often got contact with them through organic project staff as well. For each case, the numbers of interviewed people will be explained in the following paragraphs

Data recording : I brought a laptop to Peru but I left it in the office in Lima and I recorded my data by hand writing in the field, because electricity was not always available and I felt more comfortable in writing first on paper sheets, and then typing data in the computer after each case study.

2. First case study in the jungle for one month

My contact in San Martin Province was CEDISA, a Peruvian NGO, in charge of technical assistance to the organic cotton project. I had the opportunity to live with a NGO staff family in Tarapoto, the main city of the province. When I was in town, I could read program documents in the NGO office. But most of the time, I was following NGO staff in their daily work to meet farmers and their families in the villages, staying in their home at night. Actually, farmers were usually available to talk to me early in the early morning at breakfast, late afternoon when they had a rest or in the evening, for dinner or after. During the day, they were working in their field, so I could meet them only when I participated in their work. I was then in the countryside most part of the week and went back to town during the week end. I made observations of daily life of NGO staff and farmers, working in the field, visit technical assistance, harvesting and collecting cotton to bring it to the ginning plant in town, farmers' meetings and capacity building sessions organised by various NGOs and programs.
In the mean time, I did informal and semi-structured interviews with farmers who were still part of the project, those who had quit certified organic cotton production and those who had never been certified organic, other villagers, and other actors of the cotton production chain in town, such as the ginning plant manager, cotton buyers and traders, transports companies and State agents and researchers. In total, I conducted 24 interviews, with female and male farmers, certified organic or not (two thirds of them are or were certified organic). I could notice sensible difference between interviewing farmers with and without NGO Staff in charge of the organic cotton project. That is why I took all opportunities I could to have even a small conversation with any people I could meet in the village. Most of the time, I didn't take notes while listening to keep the conversation more spontaneous. I noticed that people were eager to tell me more about their opinion on organic farming when we knew each other a little bit more. So I stayed in the villages to make acquaintance first. After talking informally with somebody, I found a way to take notes of what I tried to remember the best I could. Generally speaking, I spent at minimum one hour a day writing about my observations, in the evening, next to the public light in the village or after lunch when I was in a farmers' house without electricity. Usually people were curious about this and I became known as "*la gringa que escribe*" (the writing gringa). I interviewed 12 agronomists or impresarios in town, thanks to NGO's contacts. When I met them, things were a little bit different, probably because they were more educated and I took notes during my interviews.
Taking pictures was also part of field data collection.
I prepared two feed back meetings, at the end with farmers I had interviewed from the two villages, but not so many of them came, although I invited them personally a few days before. I shortly presented my research objectives, methods and preliminary findings and then, I tried to use some participatory methods I had learnt at Wageningen University but it was difficult to get participants' inputs in the discussion. The first evening, I had prepared a workshop with cards for farmers to write their ideas on it, especially about the one year old organic farmers' organisation. But it became clear that they were not familiar with writing at all. Then, for the second evening, I proposed them to draw a cotton plant and anything they would relate to it, as a start for the discussion. But again, it was difficult to make them to participate in the discussion. Most of them only drew the cotton tree and didn't have any comment about it. Only one farmer drew other elements around it, related to better seeds they wanted to get from a seed multiplication project, with their farmers' organisation. I was a little bit disappointed after the meeting but local NGO worker, who did a speech before me about this seed project told me afterwards that this drawing exercise had brought something totally new for them:

informal interaction between participant and dialog with facilitator. Although it didn't reach the topic I expected (their organisation), it had a positive impact, at the end.
I organised a final presentation for ginning companies, NGO and development programs workers in the city who had helped me in my research. I presented my preliminary findings to them and asked their opinions and comments on them. It turned out to be a lively debate, between actors who usually don't meet, thinking they already know each other's stand points and that their disagreements would not bring anything useful for them. But this time, I think I made people who hardly interact, talk to each other and illustrate to me the different perspectives on how to improve small cotton growers' situation, and whether organic certification was helpful or not. I was asked to write a small article in local a newspaper about my results and I did a presentation to students in the agrarian university of the province.

3. Second case Study on the coast for one month

On the coastal area, I could also get contacts and accommodation through the RAAA from Lima. I was living with a former land owner and his family, on their farm, as they managed to keep around 60ha from the land reform in 1970. It has been a wonderful opportunity to have an extensive dialog with this farmer, who is actually passionate by organic farming. I could also learn more about biological control as we made observations of pests and natural enemies in his field every morning. But most striking was to get to know the Culture of their social group of Spaniards descents, who used to own much bigger land parcels and still employ a lot of agricultural workers. It helped me to understand the former hacienda system and its remaining elements in today's relationships between different farmers and agronomists in the organic cotton project in particular.
There, I had also my first contact with Peruvian staff of SIB (Small Is Beautiful), a British NGO, which became responsible for technical assistance to organic cotton project, in 2004. I first did some reading of project documents and meetings with various actors in the NGO office in the city of San Juan. I could also follow the NGO staff to visit farmers in their field, but it appeared much more difficult to share moments of their daily life than I could do in the jungle area. Why did it happen like this? I think it shows characteristics of the Culture of farmers and NGO staff, who have a much more hierarchical distance between them.
I did some participant observations of technical assistance, courses for farmers and meetings within the project.
I also did informal and semi-structured interviews with farmers who were still part of the project, those who had quit and those who had never been working in it. In total, I interviewed 33 certified organic cotton farmers , among them 6 women, and 10 former organic cotton growers, and 6 non organic cotton growers. I interviewed 9 other actors related to (organic) agriculture and cotton, involved in the project.
At the end, I was asked to do a feed back meeting in Lima for project managers and agronomists, neither with farmers nor technicians from the actual area. It was clear that project managers feared that I would write negative things about their project and that it would be read in Europe, possibly by funding organisations. I wrote a report for them and NGO staff about my results. They asked me to send them my final thesis so that they could read what was written about their work, and maybe they wanted to control it.

I had the opportunity to participate in a RAAKS (Rapid Appraisal of Agricultural Knowledge System, a diagnosis method developed in Wageningen University by Niels Röling) course for Masters of Science students from Lima University, most of them actually being senior agronomists. Teachers were Peruvian Wageningen alumni. I worked in a group, among them

my advisor from RAAA, about organic cotton in the Coastal area and our topic was the “Lack of transparency in the organic cotton production chain”.

At the end of my stay in Peru, I have presented my preliminary findings, trying to make a comparison and a synthesis of both cases I studied, by a presentation in Lima and a report for the RAAA and any other actors who had supported me in my research. I participated in organic cotton web site elaboration to improve contacts between various actors of the system.

4. Effects of being a European young female researcher in Peru

During those few months I have spent in Peru, I “took a picture” of two organic cotton projects, which had been developed for more than 6 years, being a long-term process. So obviously, my study encounters some difficulties in understanding, especially context’s elements that can influence farmers’ choice about organic farming.
In interviewing people, I had to face communication limits, due to the fact that Spanish is not my mother tongue and that I had to refresh it especially at the beginning. Moreover, in the jungle case, Quechua was spoken by native people, especially women, so I had to ask someone to translate, sometimes. But beyond languages, I had to adapt to different cultures, of course and different ways to express things. It took me a while to understand that people wouldn’t easily criticise organic projects, being part of it, for instance. Another example, is that I figured out that people would give an answer to my question, even when they didn’t know actually, to be polite and to give a good impression to me. That is why triangulation of different source of information was crucial. As an outsider, I surely missed some elements of historical and political context, but I tried to get any clue I could, especially by observing daily life of the people I was living and working with.
Finally, last but not least, I had to face certain expectations from the people I have met, toward me, a white young female educated researcher. In the particular context of certified organic farming, farmers associated me with NGO staff, coming to control their practices. I was taken as an inspector, that would influence their certification and their access to international market, not only by them but also by staff members themselves, including projects managers sometimes. I was asked several times by farmers and NGO staff to help them finding markets for their organic cotton in Europe.
Sometimes, I could not keep my researcher’s neutrality safe and I had to comply with those expectations. For instance, I could not make any presentation to farmers and technicians about my results in the coastal project because managers wanted to control what I wanted to say. But then, this fact told me a lot about their perceptions of organic farming and trade, where rich consumers’ countries have big influence and authority on them, in a rather hierarchical way, mainly because of economical reasons. Organic cotton projects are dependant on international funds and markets.

Chapter 5: First case study in the High Jungle[2]

1. Context of the study: organic by default

1.1 Agro-ecological context: low external input diversified system in crisis

On the green eastern side of the Andes, the climate is tropical in the mountainous region of about 1000 m altitude. It is then warm and wet all year long. Agriculture is practised on sloping terrain, which makes erosion threat even greater, together with deforestation: "North West Amazonian rainforest is where deforestation has the greatest rate in Peru: 57,000 ha/year, from unorganised growing agricultural exploitation with intensive pesticides using mono cropping inadequate use of the natural resources." (Gomero and Velasquez 2003)

"San Martin population has doubled between 1987 and 2002, from 400,000 to 800,000 inhabitants." (Reinders et. Al. 2003) In this growing population context, cotton farmers use a migrating slash and burn agricultural system with land rotation of 15 or 20 years.
Farmers usually have mixed crops, as corn, cotton, beans, coffee, fruits (plantain bananas, citrus, cocoa, papaya) and timber trees in the same plot of land: However, this apparently ecologically sustainable system has to face land rotation shortening as population is growing, which implies a soil fertility loss. "Shifting cultivation is a sustainable production system if the population is limited. But if the population grows, fallow times are shortened because of a lack of agricultural land. As a consequence, soil fertility is not regenerated, resulting in terrain degradation by severe erosion processes." (Reinders et. Al. 2003)

In this region, cotton is sown from November onward and is hand picked until October. Native variety, "*Aspero*" which means "rough" in Spanish, for its short length fibre, exists in both white and brown natural colours, as a particularity of this region.

1.2 Socio-cultural context: traditional reciprocity

Native people in this area are "*Lamistas*", whose cultural capital is the city of Lamas. In the city and in the countryside, they co exist with "*Mestizos*", people of mixed Indian-Spanish descent. "According to research done on Lamistas, (…) there are different versions about their origin. A first one says they are descents of Ancohuallo, *chancas*' chief, who rebelled against the Inca, Tupac Yupanqui's captains' cruelty, reason why he was excluded from Inca Empire. (…)He maintained his independence from the Incas, fleeing to the jungle to avoid being subdued.
The second version says *Lamistas* are the result of various ethnical groups fusion in the high jungle, with *Quechuas* villagers from reductions established by Jesuit missionaries in the 17th and 18th centuries. Mid 19th century, colons from north Peruvian mountains have migrated to high jungle, integrating with *Lamistas*." (Pardo et al. 2001)

Although totally adapted to the jungle environment, they have kept from their origin *Quechua* language, women traditional clothing with a long black heavy skirt (see picture) and many customs and cultural trends. The community members reciprocity is expressed in the traditional mutual help system "*choba-choba*" (same as "*minka*" in the Andes) and many

[2] Names of places, organisations and individuals have been changed to respect their privacy.

relations with nature, where lots of divinities are believed to stay. As Pardo et al. (2001) say, in their research on bilingual education as a way to keep their language and culture alive,
"In the Amazon region, people's life cycles are still related to natural and agricultural cycles. (…) *Quechuas* life can be characterised by great ecological and cultural diversity management. Ono lives in a community from birth to death, *Choba-choba* is present in daily life, building paths, houses, festivals, sowing, harvesting, etc. (…) *Choba-choba* is a spontaneous activity, it expresses itself at any time of the year and is related but not only to fields tasks : soil preparation, sowing, harvesting. In the villages, *Choba-choba* aren't realised in established fixed closed groups (…). The number of participants depends on life circumstances, it has no extension limit , it reduces and grows according to needs."

Although Mestizos don't speak *Quechua*, nor wear traditional clothing, they share a lot of customs with *Lamistas*, among them *choba-choba* and traditional beliefs mixed with Catholicism. Indeed *Lamistas* regularly invite *Mestizos* neighbours to their traditional festivals. Only those who are converted to evangelical churches may abandon a little bit more their traditional beliefs.

1.3 Economical context: small self- provisioning farms

In this region, the average size of cotton farmers' plot is around 10 hectares but this average may vary a lot and only 1 or 2 hectares are cultivated at a time. The rest is left fallow "*monte*" (wild forest or bushes) to let the soil "take a rest", as farmers say. Some families live in villages with clay hard construction, electricity , roads to bigger cities like Tarapoto and primary and secondary schools nearby, while others still live in the jungle, with temporary wooden constructions, migrating to another place in the forest, when their land is "exhausted", as they say. Don Pablo, 64, from Solo, told me :
"My land is exhausted now. Each year we harvest less and less cotton, beans, corn… Cotton plants are smaller, with less branches and less cotton bolls. There is no more "*monte*" (wild fallow part). I am thinking of selling this land to move somewhere else with my family but I can't take the decision. My elder son has to decide as he will get the land when I can't cultivate it any more. Maybe he wants to live in the village. He has to decide."

Regularly, families like Pablo's abandon their migrant life style to settle down in villages, to benefit from previously cited advantages. They usually keep farming but don't live in their plot any more.
Big part of the land plot is usually for auto consumption crops but cash crops are also present, among them cotton and fruits, sold at Tarapoto market, 40 km away. Collective taxis are common on the paved road from villages to the city, following the Mayo river valley.
This area is said to be a former illegal coca leaf growing region, but it is possible that farmers still have some remote plantations hidden in the jungle. That is why there is a strong presence of alternative development Peruvian and northern American agencies, supporting private sectors initiatives and market development in the San Martin region.
Nevertheless, cotton farmers are far still from this enterprise logic and don't usually invest any money in their agricultural activity. They get the seeds from their own harvest and exchange them with neighbours. They don't use any other external input (no fertiliser, no pesticide). There is no mechanisation. People work collectively with only machetes. Still persists *choba-choba,* the traditional mutual help system for agricultural tasks and building houses for instance.

Pluri-activity is common and farmers have access to credit for running a small shop or a small transport company, but not for agriculture.
To summarise the local farmers' situation, we can say that natural diversity, cultural harmony with nature and the lack of financial resources make this agricultural system organic by default, to cope with natural and economical uncertainty.

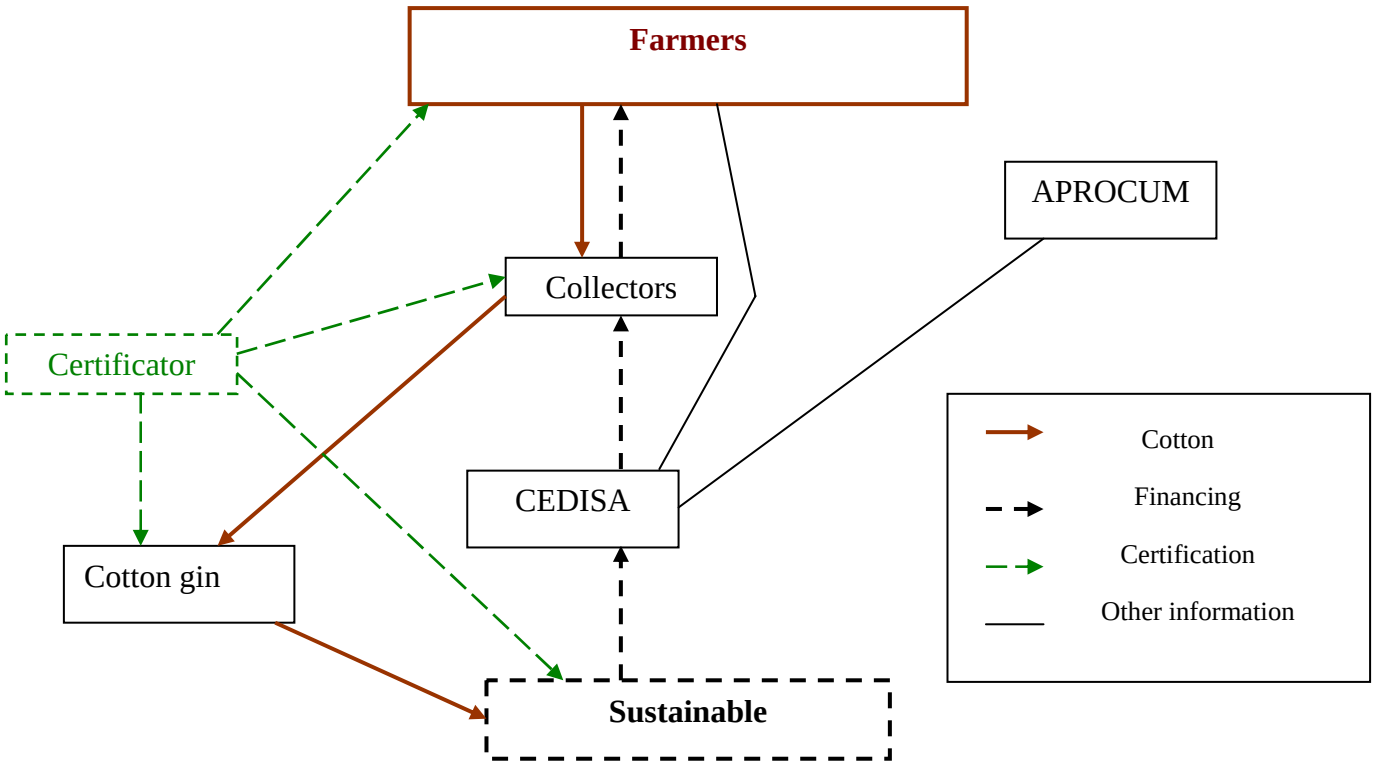
2. The organic cotton project: brief history, following the market's ups and downs

It is important to know that the native cotton variety "*Aspero*" is originally from the Rainforest and both white and brown types have been cultivated for ages in this area. Before the 90' coloured cotton didn't have any market and therefore was only cultivated in small areas for private consumption. Traditional villagers use cotton for clothing and making tapes to carry all kinds of things on their forehead. There exists a traditional medicinal use of cotton as well.
In 1990, a local NGO focussed on development and research about high rainforest, started to work in the village San Miguel on the Mayo river, after it was partly flooded. Main working themes were agricultural diversification and anti soil erosion measures.
In 1992, a northern American anthropologist came in the low Mayo valley, for his research on coloured cotton and as part of an alternative to the coca leaves production program. Farmers, stimulated by his enthusiasm about this naturally brown cotton, started to grow it. But this development was so sudden that there was no sufficient market and in 1995, came an overproduction crisis in brown cotton. Farmers protested until the State intervened, buying the surplus at a low price.
During the years 1996-1999, local NGO CEDISA (*Centro de Desarollo y de Investigacion de la Selva Alta*, High Jungle Research and Development Centre) and Sustainable, a northern European company, started a certified organic brown cotton program in the villages of Solo and San Miguel, with volumes linked to the demand. CEDISA staff was in charge of technical assistance and the RAAA (Peruvian Pesticides Action Network branch) supported them in a capacity-building program, for farmers, agricultural professionals and children at school about the need to protect the environment, the danger of pesticides, and about organic agriculture. This project was quite successful. However, between 2000 and 2002, it stopped due to a missing market for the final products. Local NGO staff was reduced from two to one.
In 2003, it started again with some promises increasing demand from the buying company. The program was extended to the Ponaza valley, with 50 farmers (with more or less 1 ha of cotton each). In the low Mayo, there were about 200 farmers involved. The APROCUM (*Asociacion de Productores Organicos de la Cuenca del bajo Mayo*, Organic producers' association from the low Mayo basin) was formed with a board of 9 male farmers from the villages of Solo and San Miguel, elected for 2 years.
The certification company was changed, from one European company to another which has Peruvian staff in Lima, in order to reduce the costs and have a better communication.
In 2004, the demand from the spinning company in Lima (associated with Sustainable) was reduced again due to marketing difficulties. It is important to realise that there was only an oral agreement , instead of the usual written contract about the order this year, and only 80 farmers were certified organic. The others are still producing organically any way, as it is their custom not to use pesticides and grow diversified crops. But those ups and downs result in some management difficulties and a loss of trust from the farmers to the organic cotton program.
The 2004 campaign was closed with anticipation but other local companies actually bought brown cotton at an equivalent price for the conventional market. It means that there were not

so bad economical consequences for farmers. However, some of them are quite angry at the local NGO who came to stimulate them to grow brown cotton and then at the end, didn't buy it. In this distrust atmosphere, APROCUM is looking for alternatives with white cotton, whose variety was recently improved. CEDISA staff in charge of the organic cotton project who is APROCUM advisor, proposed a seeds multiplication project for this new variety, in collaboration with a Peruvian cotton buying and ginning company, Agrarian Bank for credit and the Peruvian agricultural research and extension institute to sell them the improved seeds. It seems that APROCUM members prefer to buy these seeds without any loan and simply make a selling agreement with a local buyer.
Whether the Peruvian exporter is going to order organic brown cotton for the next campaign is not known yet.

3. Map of actors

Fig. 5: Map of actors of organic cotton in Tarapoto



Comments on the map of actors:

The collectors (*acopiadores* in Spanish) are farmers who buy other farmers' cotton, financed by the program, as it is actually with non certified white cotton and local companies. They play the role of middle men but being cotton producers themselves.
In fact, cotton goes trough intermediaries who spin and weave and sometimes even make clothes before it goes to Northern Europe. This is a simplified scheme focussing on the farmers and their interacting partners.
Remarkable is the fact that APROCUM, the farmers' organisation, actually created by a local NGO in order to support them, doesn't have much links with them until now, neither with other actors of the system.

4. Why do farmers convert to organic cotton?

The main research question of this study is : What are the reasons why Peruvian smallholders convert or not to organic agriculture ? Reasons can be of different kinds: our research gives special importance to social aspects but one can expect them to be inter-related with economical and agro-environmental ones. The results will be presented following the research sub-questions.

4.1 How do farmers justify their choice?

In this case, the decision is more about growing brown vs. white cotton with this particular local NGO, than a matter of converting to organic farming as farmers actually practise organic agriculture anyway. All of them answered me that they decided to grow more brown cotton stimulated by the American anthropologist and later, by CEDISA. The initiative of certifying organic their product then comes directly from outside, the market demand for an ecological and native product. Indeed, the anthropologist told me : "*I am only interested in native farmers to help them to maintain their traditional system.*" He actually started to run an ecological cotton exporting company still buying cotton until now, although he withdrew from Tarapoto region, facing competition from Sustainable, working with CEDISA.
Then it is clear that farmers' individual decisions have to be studied within the whole context in order to analyse organic cotton development.
When it was needed to reduce the number of certified organic cotton producers, mostly those remained who were not too far away from the road, to simplify technical assistance and internal control system from the NGO staff and the three collectors. This is a good example to show how big the influence is of this NGO in determining who is certified organic and who is not.
Nevertheless, farmers still have space for decision. The quality of the relationship between them and the program also mattered, where collectors have a very important role to play. There was a case in San Juan village where the collector was in conflict with the NGO about money. Finally, he managed to discourage all of the farmers who were selling their cotton to the program through him.
At the moment, the NGO doesn't want to increase the number of certified organic farmers.
Organic agriculture's main characteristic is not using chemicals. It means much more than that but in this particularly diversified farming context, it is actually the main factor. In this region, very few farmers use herbicides or insecticides. It appears to be relevant to wonder why some farmers start to use chemicals instead of asking only why the majority doesn't use them.
In terms of sentiment, as an element of social behaviour (Homans 1951), we can say that farmers have a strong cultural attitude against agro-chemicals. Nevertheless, the decision to be certified organic came from buyers' sentiment, in a broader context of market demand for ecological clothing, as we will see in the third sub-question.

4.2 What are the actual consequences of organic conversion on their livelihoods?

As organic agriculture suggests, sustainable agricultural practices can be observed, as crop diversification (beans, wood trees, fruit trees, *sacha inchik* or jungle peanut, to make healthy oil for export market, etc.), practices against erosion and to improve soil fertility (living barriers, three points seedling, following the level lines, *shunto* or on site compost of crop remains), without agrochemical use. Local NGO's actually had an impact on farmers' practices, not only those who grow brown cotton now since there was a lot of change in the group, following demand's ups and downs. This leads us to economic consequences.

Although it is one of the principles of certified organic agriculture, certified organic brown cotton didn't reach a better price than conventional cotton this year. It can be explained by the existence of a niche market, and higher processing costs for small amounts in comparison with conventional cotton. Thus, we can't say farmers get abetter income from certification. However, the program offers an export market for brown cotton and then, participates in

farmer's income source diversification. Organic certification freezes somehow a rather informal system, because farmers have to use organic seeds from the program and sell their harvest to its collectors, when, outside the program, they are used to sell their harvest to various collectors from different companies, depending on the price and their human relations with them. Talking about relations, social aspects are important too to understand why farmers go for organic.
As it was explained before, farmers have to stay permanently with the program, at least along the campaign and hopefully, years after years, as organic agriculture is a long term view process. In this context, collectors have a very important role to play to support the group and communicate market and product quality information. One of the program consequences is starting APROCUM farmers' organisation in 2003. However, one year after, its objectives are not well known yet. Officially, it is in charge of the internal control system for organic certification and cotton commercialisation, with local NGO. Talking about capacity building, despite an integral capacity building program by Peruvian PAN branch and technical support from CEDISA staff, there exists a discrepancy in information and organic agriculture perceptions among farmers. Those who have close relations with development projects and foreign actors, such as program's own collectors, will know for sure the term organic and what it means. But, on the other side, most of the farmers practise organic agriculture without naming it as such. It is not clear whether there is a link between higher education or age and knowledge about the concept. But what seems to matter are actually those links with the "outside" world, meaning actors from the main town Tarapoto, capital Lima and from other countries.
In farmers' social behaviours of growing organic cotton, those consequences can be analysed in terms of activities, in Homans' view. Within those activities, the agro-ecological aspects are quite positive but the main reason why farmers get certified is a social one: mainly their relationship with NGO staff. This leads us to the third sub-question.

4.3 What are the determining factors from the context, for smallholders to convert into organic?

It appeared quite rapidly that the actors from the context had a very important role to play in organic cotton development in Peru.

4.3.1 Companies, first interested in organic native brown cotton

Mainly textile companies, from Northern countries, are the ones who started to support organic brown cotton production. Organic certification is still paid by the export company. Their interest in brown cotton comes from growing environmental and social awareness and concern among customers and the existing demand for "clean and responsible" products by Japanese, Northern-American and European customers. Fibre is processed by a Peruvian company in Lima and Pisco, whose European buying company Sustainable, is an associated partner for ecological textile. Clearly, those buying companies have pushed farmers to grow brown cotton they certified to export.
Cotton ginning is made by a Peruvian company in Tarapoto, who asks for almost a double price than the conventional, due to small volumes and the necessity to stop and clean the machine before processing organic cotton without any risk to mix it with conventional one. But this company is just interested in using its machine selling its services, in addition to buying and ginning its own cotton, and does not have any commitment in organic textile, beside the fact that its ginning plant is certified organic, such as all the installation that

process organic cotton. This year, with market problems for organic brown cotton, it has bought more of this than it usually does. Moreover, farmers tend to mix brown with white cotton since the white cotton weight price was superior, which induces more labour costs for the processing company to sort out brown from white cotton. So the ginning company is not so in favour of brown cotton development. But it doesn't have much contact with farmers so it doesn't influence their decision.
Another Peruvian cotton ginning and trading company started a white organic cotton project in Juanjuy area, with technical support but the farmers are not certified yet. The number of farmers is not certain. The company claims 200 but the Ministry of Agriculture local office monitoring production chains says 20. This information is therefore not really reliable. Maybe the interviewed company staff wanted to give a good impression to me, as I was asking about organic cotton projects. It shows that organic agriculture is known by local traders as something Westerners like and that would give a positive image of their company.

4.3.2 NGOs, principal supporting actors in the organic brown cotton field

NGO's are important institutions in organic cotton development, mainly CEDISA, in charge of technical support and of internal control system for certification. Local NGO's objective is to enhance crop diversification to improve agro-ecological and economical sustainability of small-scale farming in the region. Indeed, PAN Peruvian branch, whose network local NGO is part of, intervened for an integral capacity building program about nature conservation, environmental protection and organic agriculture in 1998. Where does this commitment for agro-ecology come from? CEDISA Peruvian leaders are educated people from the city, influenced by international intellectual movements for alternatives to globalisation. But the NGO's objectives can also be influenced by foreign funding organisations, in this case: Contra-value fund Peru-Canada, USAID (United-States), the Netherlands Embassy, and companies as well, such as Northern European organic cotton buyer.
So it is clear that CEDISA, supported by its network, wants to convince farmers to join the certified organic group. CEDISA think it is a good alternative for them, in a paternalistic attitude. Sometimes, it uses its "friendship" with farmers to attract them and it can work. When farmers are friends of CEDISA staff, they may join the organic program because it gives them trust in it or because they hope it can fulfil their personal interests.

4.3.3 Public sector, following but lacking of resources

At last, the public sector is characterised by various institutions linked to cotton production but very few of them actually work with organic agriculture. Let's visualise those institutions:

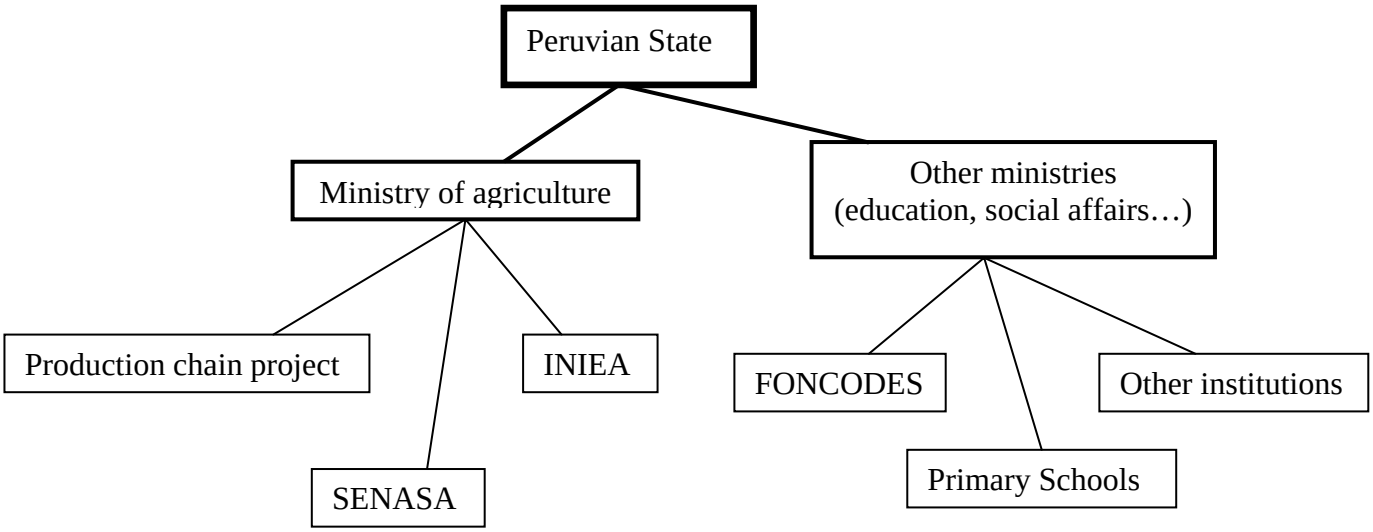


Fig. 6: Public institutions related to (organic) cotton production

The production chain project of the Ministry of Agriculture looks for better relationships between farmers and buyers, in various products, including cotton. SENASA (*Servicio Nacional de Sanidad Agraria*) is the Agrarian Sanitary National Service and doesn't have so much pest and disease to worry about in cotton production, thanks to a rather diversified cropping system. Then, SENASA staff doesn't feel really concerned about organic cotton and doesn't get especially involved with farmers with regard to this topic. INIEA is the Agricultural Research and Extention Institute. It has just set a new white *Aspero* cotton variety, called Shanao 802, certified by the Regional seed committee. Experiments are done in a farmers' plot in San Miguel but apparently, he is known to get agro-chemicals for those. Because of missing funding for it, there is almost no research done by INIEA on brown cotton, neither on agro-ecology. It seems that INIEA's priority goes more to conventional cotton which has a bigger market.

In other ministries' domain, a capacity building program will start in the low Mayo valley, for corn, coffee and cotton growers, held by FONCODES (*Fondo Nacional de Compensacion de Desarollo Social*, Peruvian national compensation and social development funds) but the themes are not known yet. Will it pay attention to organic cotton farmers and their specific needs in terms of capacity building? Probably not if public institutions are the only one to decide. That is where NGOs can make a difference. In primary education, for instance, RAAA NGO from Lima organised a raising environmental awareness program but has stopped now. Themes change with funding but, with the children turn-over, it would be useful to go on with it. At least, it shows that public institutions can be influenced through civil society to support organic cotton development.

The third Homans element to understand social behaviours, interaction, appears to be the main explanation for farmers' organic certification. In their main interaction with international market demand, Peruvian NGO plays a key role making the link between the two.

5. Preliminary analysis of the reasons why cotton farmers convert to organic in the Low Mayo valley

5.1 Organic agriculture and Culture

When talking about organic agriculture in the above described context, there are two important issues: metaphors and practices. About the metaphors, we can observe a certain diversity among farmers' perceptions. Some mix up "*organico*" (organic) with "*organizado*" (organised), in their organic farmers' association APROCUM, for instance. Clearly, farmers associate "organisation" with any development project as they are usually asked by NGOs to organise themselves in an association or a co-operative, as it occurred in this case. So they made the fusion between organisation and organic farming. On the other hand, it seems that the term "organic" was brought by the foreign companies, interested in growing market demand for ecological products. Farmers and other local actors can feel that this term has a positive connotation for buyers. I could feel it myself that saying I was doing research on organic cotton farmers, that my respondent somehow changed attitude. Especially in this cultural context, where people don't oppose directly to their interlocutor, they adapted to what they thought was my opinion, as a European agronomy student. It mostly happened with public institutions engineers, very positive in what they said about organic agriculture but at the same time, having all kinds of agro-chemicals companies posters, caps and T-shirts. Farmers also have T-shirts from the organic cotton company with written on it "*no quimiquear la tierra*" (do not chemichalize the Earth) but they also wear those from agro-chemicals. On one hand, we could assume that no matter who gave those clothes, they would use them anyway. But on the other hand, there are plenty of T-shirts from political parties, promoting them among the low educated population. NGOs also use T-shirts to communicate gender balance and ecological messages. In the town, each company has its soccer and volleyball teams and workers also wear T-shirts with the name of the companies. Actually, those T-shirts are part of people's identity. There is even a Spanish expression, coming from soccer : " *Ponte la camiseta por la agricultura organica!"*, which can be literally translated as: "put on the shirt for organic agriculture!", in this example, and it means : "get involved for organic agriculture!". Indeed, farmers are given T-shirts with sometimes contradictory messages. But they may also be proud to wear a Northern label, even if they practise organic agriculture and like it this way. It symbolises well the ambivalent feelings they have towards "*gringos*" (as they call westerners). In farmers identity building, agrochemical companies coming from outside somehow transcend expected division between organic and conventional ones.

Talking about practices, it is important to consider *Lamista* cultural context. As it is mentioned by Pardo *et al* (2001), I could observe, during the month I have spent in the region, how reciprocity, among people and between people and nature is important. As an example of this reciprocity, we can see the *choba-choba* collective work custom. Villagers help each other with agricultural tasks, private and public building and maintenance, doing it in turns, without salary but getting food and drinks (especially *chicha*, local maize beer). Harmony with nature makes them cropping without agro-chemicals but there are some economic reasons as well. Poverty, meaning lack of cash and a major climatic, pest and market uncertainty can explain their low investment and products diversification and high auto-consumption strategy. Pests are usually kept at an acceptable level by high bio-diversity. But for soil fertility, shortening plot rotation has enhanced erosion problems CEDISA tries to work on. In the cotton case, I did not observe any significant agricultural practice differences between *Lamistas* and *Mestizos*, and local staff confirmed my observation.

However, some farmers in the region had used or started to use herbicides and pesticides. How can this shift be explained ? In some cases, farmers totally change their agricultural system, toward mono-cropping in the weakest slope terrain, influenced by an educated younger generation. Another reason can be pluri-activity. When a farmers' couple works in a chicken farm for instance, they get more cash money to buy herbicides and less time to weed with their machetes. However, some farmers had some experiences with pesticides in coca fields during the 90's and recall intoxication cases. Generally speaking, people know agro-chemicals are dangerous for their health and have negative consequences on soils. They say that "chemicals dry the soil" but we can wonder what they actually understood from NGO workshops on this theme. This is still not clear to me. It is necessary to train the farmers but until what level ? In the context of such a big cultural gap between the world of those farmers and the ones of the program (NGOs, companies, research institute, public institutions), communication happens to be difficult and there is a tendency from the program to simplify the debate about pesticides, which "are bad, anyway ". But playing the devil's advocate, there must be some (good) reasons why rice farmers in the plain area or colon farmers in the jungle, coming from the Andes, use them for instance. How can we "conserve" the traditional sustainable agricultural system ?

5.2 APROCUM, what for ?

It seems that the farmers organisation APROCUM is still looking for its objectives and tasks. According to interviewed members, "its objectives are to improve cotton commercialisation and to develop farmers' capacity-building". But it has started recently and members still need to be trained, whose task is mainly CEDISA staff's. In the APROCUM board, there are farmers cumulating responsibilities in San Miguel and Solo villages. They are a group of people used to organisations' meetings, where not so many decisions are made but they listen to leader's speeches. Those meetings help more to leaders' recognition in the community and to attract NGOs development projects, funded by international co-operation, than to make decisions together. On the other side, those regular meeting participants are the ones who know how to communicate with agronomists (so called "*ingenieros*"), how to talk in public, how to read, write and count and they also have a certain influence on the other farmers. They can be "bridges" between those two cultural spheres.
There is very little women participation in meetings. APROCUM members are usually heads of family, men and in few cases women (widow or separated from their partners). At the same time, there are "*Club de madres*" (mothers' clubs), where they crop a common plot to finance capacity-building activities. As *Doña* Delfina told me :" In our *Club de madres*, we have meetings every now and then. We crop our common plot of land, we drink *chicha* together, we talk. When it is time to harvest, we share it or we sell it to Tarapoto. With the money, we can buy soft drinks for capacity-building sessions about health or education of the children." The most important for their members, as in any organisation, seems to be the being together, more than the objective.
Until now, APROCUM is highly dependent on the NGO cotton project facilitator, although he himself claims that farmers have to be autonomous. He takes care of communication between APROCUM and other institutions. He made the board members visit the ginning plant in Tarapoto and some of them could make an agreement with the company's director to collect and trade white non certified cotton. They also could start to think about a seed multiplication project together. In this project, farmers would be more like "*empresarios*" (farm managers), investing in their land, using loans. But many elements show that those farmers do not correspond to this vision. For instance, the bank requirements just don't fit with farmers

reality (3 ha minimum, with land propriety titles as a guarantee but most of them don't have those). On one hand farmers say they don't want to take a loan for farming, but on the other hand, they do use loans from another NGO, with higher interest rates than the bank, for other activities. Generally speaking, this example shows well the confrontation of farmers with company managers, whose perceptions and strategies toward risks differ totally.
What is interesting is that, facing market uncertainty for brown organic cotton, APROCUM is looking for alternatives, but not especially in certified organic agriculture. Although they are called "*asociacion de productores organicos*" (organic farmers association), they present themselves as a cotton growers association, as most of the board members were also in a former cotton committee board in San Miguel, in the past. The president's house in San Miguel is used for different meetings, among them those of the local green political party *Nueva Amazonia* (New Amazon) the same actors (farmers and NGO staff) are involved in. In this case as well, NGO facilitator fills the gap between Tarapoto and San Miguel.
Last but not least, there is a disagreement between two geographical zones in San Miguel, that is why there are two distinct collectors. But in the APROCUM board, only one part is represented. It mustn't ease co-ordination. Working in two different villages doesn't make it easy either. Again, the facilitator has to make the link. All those gaps to be filled make him a crucial element in the whole project indeed.

5.3 Powerful Market for ever ?

The most important trend out of this study is the market importance in organic cotton development. Although the inducing export company may have a "responsible" will, it seems that, as in any conventional production chain, market risks are transferred back to small farmers at the end. Unstable demand makes it difficult for the project, especially to have a long term view. But it is certain that, although it is called "Sustainable", the company just can't go on buying cotton it is unable to sell afterwards. As they still had 2 years' harvest ginned in stock, a simple oral agreement was made for 2004, instead of the normal written contract. What is still strange is that the company asked to increase the number of farmers and the production just a year before. Did they expect a growing demand? Is "Sustainable" only a good image they want to advertise to customers in Northern countries? What does this term mean for this company?
On the program side, it is needed to look for alternatives to sell cotton, instead of depending on only one buyer. But here comes a debate about who actually owns the organic certificate, when certification is paid by the buyer.
Brown and white cotton handicraft already exists at a local level, linked to small tourism market in the region, and could be a development alternative for small volumes. (see Saint-Guily 2004)
Generally speaking, farmers have very little knowledge about what comes next, after collecting the cotton in their village. They don't even know the ginning plant, in Tarapoto, although they go there by collective taxi, to sell their fruits on the market. Some asked me: "Where does our cotton go ? What do they do with it ?"Villagers know how to spin and weave to make straps and clothing but they don't figure what can be made out of their cotton, in other countries, far away. As mentioned before, board members and cotton collectors usually know more about it than normal average farmers. One of the board members told me: "We have to defend small farmers facing much bigger companies, that are much more powerful than us, individually."In between those two worlds, market is the first link but one can ask about farmers' perceptions of the market, indeed.

5.4 Whose responsibility is the organic cotton production?

Agronomists as well as companies' owners are still influenced in their perception of rural reality by the times of the big "*haciendas*"(landholdings), from before the Peruvian land reform of the early 70's. It is visible in the way they say : "This company grows cotton in that place." It actually means that this company buys cotton from farmers in that place. They often give them (non bred) seeds for free and sometimes provide technical assistance to farmers, and a written buying contract in that case. But nevertheless, farmers are still the ones to grow cotton, and not the company actually.

Although there have never been big "*haciendas*" in the region, some agronomists really missed them, as production and commercialisation co-ordination were much easier in this case. But now, in a context of so many small farmers, with low educational background and such an informal organisation, there is a general tendency to paternalise them, especially when it comes to farmers' associations. So did the local NGO in this case actually. It is almost as if the responsibility was the NGO's or the company's in growing organic cotton.

Market power and buying companies' incentive role make organic cotton a rather (neo)colonialist crop, as cotton was in the past. In Peru, white conventional cotton has a national market but the organic one is only for export so far. Although the exporter may talk about fair trade or ethical responsibility, as its name "Sustainable" suggests, they are finally not able to protect small farmers against international market's big risks. They obviously have no choice but it is important to analyse it more in depth, to get a more realistic picture of organic development in Southern countries.

Chapter 6: Second Case study on the Central Coast[3]

1. Context of the Central Coast organic cotton project

1.1 Agro-ecological context: intensive mono-cropping and IPM

The coastal zone of Peru is a dry and hot sandy and rocky desert, with many rivers coming from the high lands of the Andes, whose green valleys contain quite intensive irrigated agriculture. The organic cotton project of the Central Coast first started in San Juan valley, where farmers have water all year long, a few hundreds kilometres south of Lima. In 2003, the project started also in Chingo valley, about 60 km south of San Juan, where there is scarcity of water. In those valleys, farmers crop cotton (Tanguis variety long white high quality fibre), corn, cassava, sweet potatoes, pumpkins, other vegetables, and vineyards, most of the time in mono-cropping systems. Farmers generally have access to credit to buy fertilisers and pesticides. However, a tremendous pest crisis in the 50s made the region one of the first in the world to use Integrated Pest Management (IPM), with biological pest control, beneficial insects, host plants for them and all kinds of traps. At that time, co-ordination was made easier by the big *haciendas* that owned the land and employed many peasants. State and haciendas' agronomists could work with an holistic view about finding a balance between crops, pests and natural enemies (Herrera 2003). Although the 1970's land reform changed the social context, smallholders, most of them being former employees of those *haciendas*, also know and practise IPM but with less State support than in the past. About fertility, chemical fertilisers are commonly used. In organic cotton production, they were replaced by seabirds manure, "guano" from the pacific islands. In a context of rather general high use of pesticides, organic plots often become refuges for all the pests and diseases around so it makes it difficult to handle. Organic cotton farmers usually use a lot of organic inputs, such as humic acid or beneficial insects and parasites. It can be somehow characterised as substitution organic farming.

1.2 Economical context: Financial dependence

The 1970's land reform gave around 4-5 ha to each family, usually more to employed men than to women. They first set some co-operatives to keep the *hacienda* organisation and share the machines. But there was so much corruption that, finally, most of them split up. Nowadays, farmers usually get loan for a specific crop, either from an NGO or a private company, which buys their harvest and subtracts the loan from the final payment. Most of the harvest is sold, either for the national or international market, via Lima. Small farmers have been linked to the international market from the beginning, as *haciendas* used to export their products already. There is very little auto-consumption. Indeed, families live in villages issued from former haciendas or in towns and usually cycle to their field to farm. They therefore have a rather urban life style in comparison to other farmers in the Peruvian highlands, for instance.

Many farmers have debt and encounter difficulties to find yearly financing to farm. Another difficulty for them is to find an insured market for their products, especially to export them. In this context, NGOs and especially organic agriculture projects appear to be attractive for

[3] Names of individuals, institutions and locations have been changed in order to respect the project' confidentiality.

farmers maybe not because of ecological conviction, but more due to credit and market opportunity.

1.3 Social context: social hierarchy

On the Coastal zone, live a minority of white Spaniards descents who usually owned the land and may still have a rather big farm in comparison with the majority of *Mestizos*, former *haciendas* employees, now smallholders (*"parceleros"* plot-holders), whose parents or grand parents came from the Andes to find work. In Chingo valley, there are some Black African slaves' descents who have remained quite culturally isolated until now. Few *Mestizos* small farmers however didn't get their land from land reform but bought it before. Last but not least in economical importance, there are still a big proportion of agricultural workers, coming from the poor rural highlands to work in *haciendas* all year long or temporarily for cotton harvest in the whole valleys. Some smallholders also work for others since their plots are too small to earn enough income for their expenses.
Hierarchy is present among farmers depending on their social background and also between State or NGOs agronomists, technicians and farmers themselves. Looking at the past situation can help to understand today's social pattern. On the apparently contradictory landowner attitude toward his employees, most of them Indians at that time, Peruvian sociologist Nelson Manrique (2004) writes :
"On one hand, land owners subdue their workers through systematic exemplary violence (…). On the other hand, Indians are considered as his little sons and daughters, him being called daddy by them. It is not rhetorical but there actually exists a complex affective relationship. What is at the basis of this apparently so contradictory behaviour is a specific notion of paternity from traditional societies with strong catholic roots: an image of a loving tender father but at the same time able to use the most extreme forms of violence to correct or punish his offspring. Violence ends up then presented as used mean for the own good of the victims."
Things have changed nowadays with land reform and social rights' establishment but Paternalism remains until now and both "fathers" and "sons" seems to reproduce it complementarily. In this context, where dependence is not only an economical matter, it turns out to be challenging to work for capacity-building, participation or empowerment, which is a common discourse among development projects nowadays. This, we will explore after a brief history of the organic cotton project in Central coast of Peru.

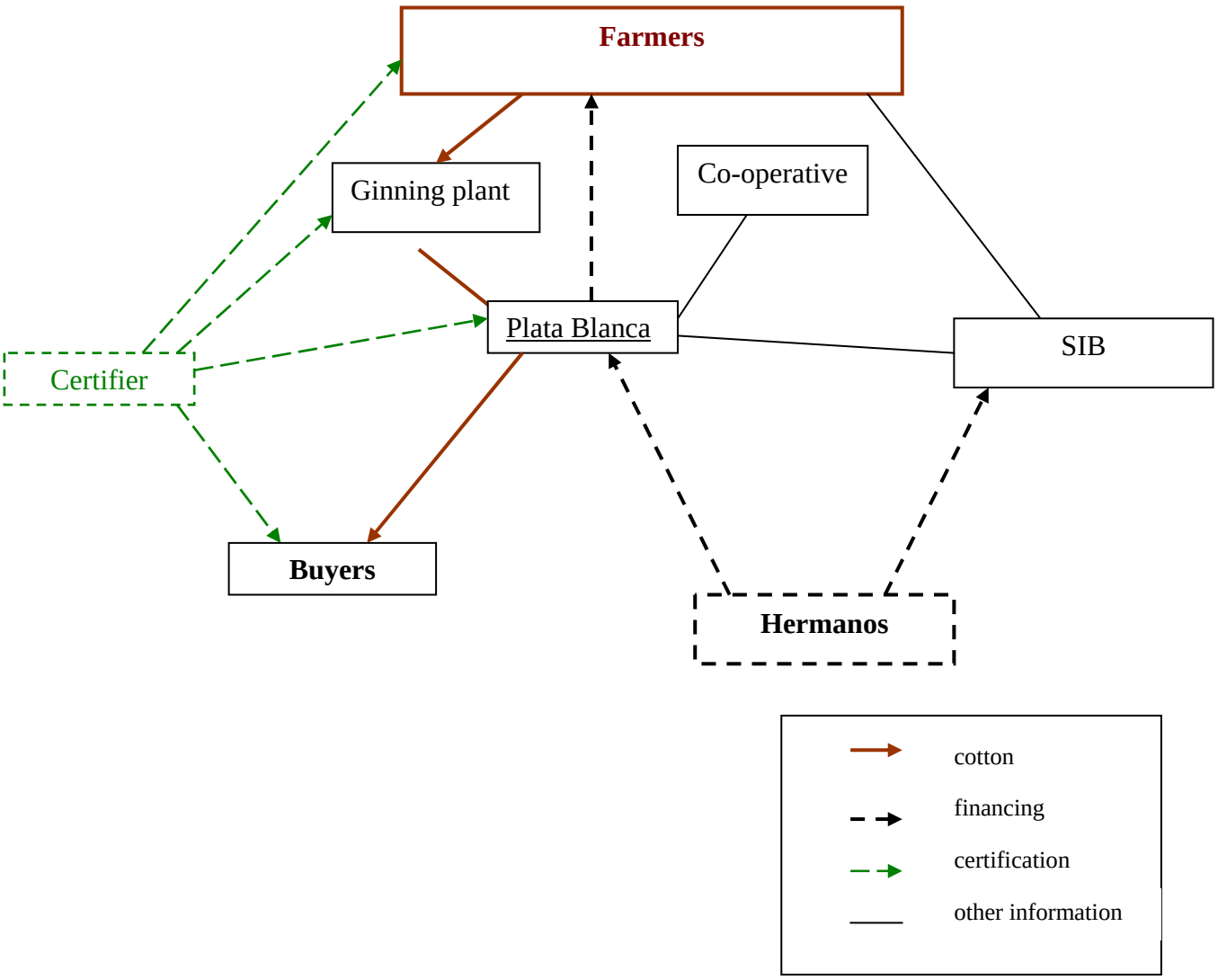
2. History of the project: Perseverance of an (eternal) transition ?

Four years ago, *Hermanos* (meaning "brothers" in Spanish), a northern European NGO, related to church, started a global sustainable textile production chain project in various countries, among them Peru, following principles of fair trade and organic farming. As part of this project, *Campo Grande*, a Peruvian NGO in San Juan, owned by the catholic organisation Opus Dei, was in charge of technical assistance and co-ordination between cotton farmers and buyers. Technical assistance is part of the organic certification process, made in groups in this case. Internal control is handled by week visits from technicians and agronomists, while an international certification company visits the project once a year, for external control. The project has constituted a small company, *Plata Blanca* ("white silver", from how farmers called cotton), to buy their harvest in advance (a kind of campaign loan). The long term plan is to let farmers, organised in a co-operative own *Plata Blanca* by themselves. That is why they choose a name used by farmers themselves, as a sign of their ownership of the company.

Indeed, such an organic cotton farmers' co-operative was formed in San Juan but until now, there were many conflicts among farmers and with *Plata Blanca* and *Campo Grande* , that the co-operative really misses credibility and representativeness.
Because of the lack of profitability of the project, in addition to those conflicts with the farmers, *Campo Grande* decided not to go on with that project. *Hermanos* and *Plata Blanca* contracted then Small Is Beautiful (SIB), another European NGO, for technical assistance, employing a new Peruvian agronomist in the program and 3 technicians coming from the former *Campo Grande* team.
Many farmers have left organic cotton production in San Juan, where it appeared difficult to get more new farmers in the program. That is why it has recently extended to Chingo, a second neighbouring valley, where farmers interested in organic agriculture were known. This year, 16 from the San Juan and 28 new farmers from Chingo total 200 ha, either certified organic or in conversion (2 years). Cotton rotates with sweet potatoes and cassava, both sold on the local market, at a conventional price. Those crops are the easiest to grow organically, in this high pest pressure context. In order to get a bigger volume of cotton, to make market prospecting easier, *Plata Blanca* started to buy organic cotton from Jorge, a former big land owner who still farms about 50 ha in San Juan. Another advantage of this alliance is that he has quite some educational knowledge and experience in organic farming and he is eager to share with small farmers. However, some of them are actually his father's former employees, which make their relationship rather hierarchical. Moreover, this more well-off farmer has different characteristics and objectives than small land holders and some conflicts rose between him and *Plata Blanca* this year, about modality of certification and technical assistance.
When SIB, in charge of technical assistance, entered the project, an evaluation was made whose recommendations led to some changes. The program is now called "organic plot" instead of "organic cotton", which means they try to promote a global system with diversified crops and animal breeding. As a first step toward diversification, avocado trees are being planted in organic farmers' plots in second valley, funded by Peruvian State compensation and social development funds (FONCODES).
But let's visualise the principal actors involved nowadays in the Organic plot program.

3. Map of actors

Fig.6: Map of Actors in the Central Coast Project



Comments on that map of actors:

Farmers' co-operative in San Juan suffers from a lack of relations with other actors in the system. That is why farmers and the co-operative are 2 distinct boxes without any link on the figure. In the Chingo case, the figure is the same except that farmers are not organised yet in any association.

Plata Blanca usually sells cotton fibre but has recently started to process it in threads and then sell it to diversified buyers, related to *Hermanos* or not.

4. Why do farmers convert to organic cotton production?

4.1 How do farmers justify their decision towards organic cotton?

Farmers first mention economical reasons for them to change toward organic cotton production. They say they have been promised better prices, lower production costs and, last but not least, campaign loan, which they really lack, now that the State agrarian bank went bankrupt. "*Campo Grande* came to offer me a better price for my cotton, so I joined them", said Carlos, who owns 4 hectares since the land reform. Since then, he is still working with *Campo Grande*, but in other export crops, since the NGO left organic cotton.
Then, they also give ecological and health reasons to justify their organic shift. Farmers know about intoxication cases with pesticides, on themselves, in their family or neighbourhoods. Among certified organic farmers, the majority of them are sensible to environmental issues and think that organic agriculture is "the future of world agriculture".
At last, there are social elements in the organic shift: farmers decided themselves toward organic also because they liked innovations and learning. Almost all farmers in Chingo mentioned their recent experience in Farmer Field School (FFS), as an opportunity to exchange information about Integrated Pest Management (IPM) and Integrated Soil Fertility Management that made them decide for further steps such as organic certification. Another factor that can explain their choice is the influence of their friends, farmers, technicians or agronomists from the organic program, whom they can trust.
Given the fact that the organic initiative comes from the program, the opposite question also makes sense. How do *Plata Blanca* managers actually select farmers? One of February 2004 evaluation's recommendations was to select them according to geographical distance so that they can be gathered in nucleus, economical criteria such as owning their land to insure a long term view, or without any dept, and social criteria , such as showing interest in organic farming. Project managers don't want to deal with "conflictive" farmers, as they call them. Do they prefer the ones who would not claim their independence too much?
We can say farmers' sentiment toward organic agriculture is mainly influenced by economical reasons. Nevertheless, some take into account other elements, such as their health or their willing to learn.

4.2 What are the consequences of this organic shift?

About agro-ecological consequences of the organic cotton program, we can notice that it helps to reinforce existing local use of biological control for pest management. At the same time, it makes fertilisation change from synthetic to organic, with pure guano from the islands, "biol" (home made fermented decoction of manure and water) and, sometimes, compost and earthworms humus. So we can say organic cotton production has some good consequences on soil fertility. Indeed, organic average yields can be equivalent or superior to conventional when pests are controlled in a balanced state. Until now, there is not so much crop diversification with organic change, because of pest management difficulties and the lack of markets for more products. Beside this loss of bio-diversity in terms of crop, the agro-ecological consequences I could observe are quite positive. It is not surprising as one of the main objectives of organic farming is to improve agro-ecological sustainability.
Among economic impacts, first, of all consequences for farmers, is the loan, or cotton buying in advance, to finance the campaign. Farmers are satisfied with that service, more transparent now that they split up from *Campo Grande*. Farmers are very seldom able to finance their

campaign themselves. Those who can, usually have more hectares of land or another economical activity (driver, trader, agricultural mechanic, teacher…). Although organic cotton is bought at a higher price than conventional (premium), farmers say that organic shift doesn't especially pay off. There comes the question about production costs. Is it cheaper to produce organically? Some farmers say yes, others say no. "It depends on the location of their cotton field, influencing yields and pest pressure", technicians of the project usually say. Generally speaking, farmers agree that organic cotton production requires more manpower (from the farmers and his family but also from day labourers), but it requires less external inputs (however more expensive ones). Moreover, farmers can sell their organic cotton to one buyer only and group certification system (chosen in this case because much less expensive than individual certification) results in less economical flexibility, whereas competition between conventional cotton buyers brings more negotiation power to conventional farmers.

Social impacts of the organic cotton program are mainly increasing contacts and exchange between farmers and with technicians, agronomists, teachers, researchers and students, not only during weekly technical assistance but also in training sessions and excursions. Talking about social organisation, as a consequence of the program, an Organic Farmers Co-operative was created in San Juan, but as it was said before, it lacks credibility until now and new organic farmers from the same valley, entering the program don't even know the co-operative exists. It is a serious problem because this empty organisation takes the space of any other that could fulfil the initial goal: to own *Plata Blanca* company. In the second valley, farmers recently started organic farming with the program and they are currently thinking about how to organise themselves. There are already trained potential leaders, who have extensive experience in working with development projects. Will it help to build an effective farmers' organisation? Or will they take advantage of their situation more individually?
Both men and women work in the fields but only in case of widows or absent man, women take responsibility of the farm. Neither in training sessions, nor taking responsibility in farmer associations, women are visibly participating, especially not in San Juan. So far, project's concern about gender issues had remained part of a development general discourse and hardly mean anything in practice.
Within its fair trade program, *Plata Blanca* did improve working and housing conditions for temporary workers for cotton harvest, by setting up a living place for them and their families and supporting their organisation to defend their interests.
Those agro-ecological, economical and social consequences of organic shift constitute the activities Homans uses to analyse human behaviours. In this case, farmers have seen positive effects of changing activities, concerning soil fertility or satisfying credit systems that can help us to understand why they convert to organic cotton. But many changes in their activities haven't paid off, which can explain why many have left the organic program, as we will analyse later in this chapter.

4.3 What elements from the context can influence organic change?

First of all, we have to acknowledge that organic change is mainly induced by development agencies, in that case, Northern Europe NGO *Hermanos*, first assisted by Peruvian Opus Dei NGO *Campo Grande*, and nowadays by SIB, another international technical NGO. Public institutions usually give a hand but only when they are asked by the program, as it is the case for SENASA (Agronomic Pest and Disease National Management Service), INIEA (Agronomic Research and Extension National Institute), Proabonos (guano form the islands national distribution program), Lima Agrarian University of La Molina and technicians local

training centres. The co-operatives central organisation, created by the land reform, offers offices and a ginning plant. But within this quite favourable institutional context, there are individuals who make the difference. Among actors involved, some farmers and agronomists particularly interested in ecological farming are members of RAAA, the Peruvian branch of Pesticides Action Network and they support actively organic development, especially in Chingo (Local Agrarian Ministry agent, biological control inputs provider, teachers, etc.). They are leaders in organic cotton development, pulling other farmers into this process.
Within the context, it is obvious that the history of th eCentral Coast of Peru, which has been a pilot area in IPM for decades, helps us to explain why so many farmers already know about it. Because of difficulties to extend the number of farmers in San Juan, the program decided to extend in Chingo valley, where water scarcity induces lower pest problems, and lack of credit results in a lower pesticides use. Small farmers have therefore a more diversified strategy in second than in the first valley, and they are already closer to organic farming. In this context, our organic leaders can convince more farmers to give organic cotton a try. But other elements of the context can influence farmers' decisions in the long run, mainly economical factors. That is why, last but not least, international organic cotton market is one of the major context factors that influence organic cotton development in Peru. We are not going to do a marketing study but it is important to know that theTanguis variety of cotton from the central coast is difficult to sell as organic because of its high price, competing with lower production costs countries, sometimes thanks to subsidies, such as in the United States. Until now, the *Plata Blanca* company is not economically sustainable and is still financed by *Hermanos*. This is to remind us that however socially and environmentally positive a project can be, at the end, it is always dependent on the market.
When organic consequences are not so convincing, interactions between farmers and other actors of the organic cotton system make the difference and mainly explain why they grow organic cotton. Let's now analyse why they actually convert.

5. First analysis of why farmers convert to organic

5.1 "Sustitution" organic farming on the short term

Comparing farmers' justifications of converting to organic with actual effects of the organic cotton program, there is a clear gap about costs effectiveness. When farmers enter the program to increase their income, it seems that they don't get it. This probably explains why there are so many movements in and out of the program. Indeed, former organic cotton farmers mentioned economical reasons to justify their decision to quit.
One of the possible explanations for this low profitability is high production costs, due to high dependence on external organic inputs, such as guano from the islands, natural fertilisers and insecticides, fungi, pheromones, beneficial insects, etc. A certain proportion of the farmers actually practise a "substitution" organic farming, substituting chemicals inputs by a natural equivalent or at least by allowed products by the international certifying body (European Norms) and don't change their whole agronomic system. They perceive the technician as a "medical doctor", coming to heal their crops with medicines against pests and diseases. Another illustration of farmers' attitude toward organic methods is the use of conventional terms such as "seeds' disinfecting" even though it is made by an antagonist fungus. Disinfecting means to kill all living germs and therefore can not be the appropriate term in the organic case.
This shows the contradiction between long term view required by organic management and short term view due to their vulnerable situation. Indeed, those farmers have to face high

economical risks, most of them having debts. It is then difficult for them to take the risk to change their whole agronomic system. What we can observe in San Juan, where exists already a middle term experience, is that only farmers who are really interested in organic agriculture remain and those who were looking for a credit opportunity didn't comply with required standards and run the risk not to reach certification of their plot, even though for 3 years in transition. In Chingo, farmers first wanted to try organic management for the first year and therefore many have only converted part of their land, in order to diminish economical risks. It seems that risks remain high in the long run, as many farmers in San Juan haven't converted all their fields either, even after a few years. This was the case of Elias, who had only a part of his field with organic cotton, and the rest still under conventional management. He was elected as president of the organic cotton co-operative of San Juan, but after a short time, "he was caught applying a forbidden product to his organic cotton", a SIB agronomist told me. Then he couldn't obtain certification of his field and had to give up his role of president. Economic uncertainty can explain why transition takes so long, at the individual and collective levels. However, other factors influence it such as high pest pressure, with conventional neighbours, spraying pesticides on their fields, killing beneficial fauna and sending all pests to the organic plot, as to a refuge, in spite of any living barriers or gates.
So farmers' movements in and out of the organic program illustrate that many of them are not deeply convinced of the organic approach, but also that their vulnerable economic situation keeps them in a short term perspective. Massive use of Green Revolution chemicals inputs in the 70's, when the IPM system collapsed with land reform, has put them in a high dependence vicious cycle of dept and short term high inputs pest management.

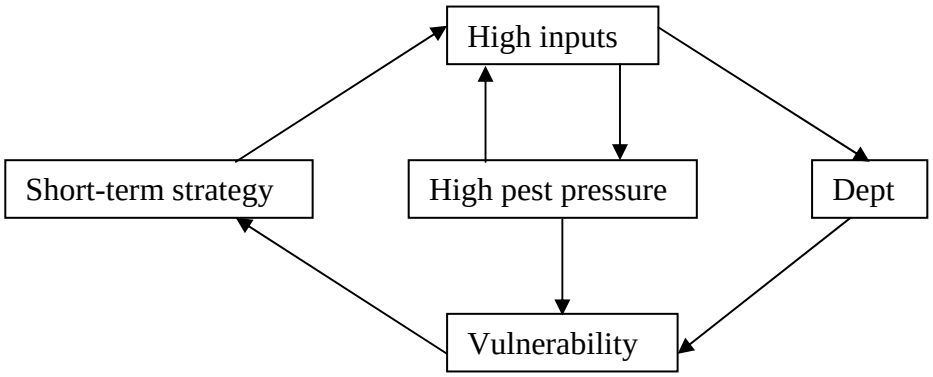


Fig. 7: Vicious cycle of vulnerability (personal source)

In addition to the high inputs-high pest pressure vicious cycle, there is a vulnerability vicious cycle that was initially induced by sudden land reform, when *haciendas*' employees became small landowners without knowing how to manage a farm. In a short term strategy, they used a lot of pesticides, so the two cycles have been sustaining each other until now.
One way to break those cycles is to work for farmers' capacity building.

5.2 Farmers' capacity building: what does participation mean in a former haciendas context?

In the case of Elias, who was caught spraying a forbidden product on his organic cotton plot; one can notice how "normative" the discourse can be about organic agriculture. Of course, Elias was ashamed and didn't tell me this story. Agronomists and technicians in charge of technical assistance have to make sure farmers comply with the norm but it comes in a context where small holders have been told what to do and not to do in a very authoritarian way for decades. Would it be possible to see farmers becoming more autonomous in their decision making? That is what capacity building is about.

Despite many years of courses and workshops, there is still a great level diversity among farmers in terms of knowledge. One of the program objectives is to build their capacity, in a participatory way. However, in reality, relationships between plot-holders (former haciendas' employees who got their plot from the land reform) and technicians and agronomists are still very hierarchical until now. It comes from history of the great haciendas and more recently from a rather vertical culture of first technical support NGO, *Campo Grande*, inspired by Opus Dei social conservatism. Actually the name itself evokes the common expression "*hacienda grande*" and its hierarchical system where farmers are just employees with very little responsibility. Talking about the gap between discourse and practices, gender issues have remained part of the discourse as well and don't mean any change in practices. We can relate this to the Opus Dei vision, where tasks are clearly divided between gender and women are assigned to housekeeping and children care. Indeed, *Campo Grande* only employed men until recently. They have been pushed by international donors to include one woman in their staff, but it is very difficult for her to take responsibility in rural development work. Those two cases, of participation and gender equity show us how institutional culture can explain the gap between discourse and practices.

Although it has been replaced lately by SIB, a more progressive NGO, things are not changing from night to day. Technicians, actually educated by the former one, put emphasis of their work on pest management and control of farmers' practices, referring to organic agriculture norms. It would be necessary to change the perceptions of the different actors on technical assistance in order to achieve more participation, with a real exchange between farmers and technicians. But technicians need to be trained about participatory facilitation methods so that they would share their knowledge and experiences with farmers, without fearing to lose their social status nor their utility. About farmers' capacity-building, efforts are made to use "learning-by-doing" methods and to enhance dialog between various participants. However, inviting university teachers carries the risk to get another "course" in a conference tone, as they are used to give with students. Farmers express the need to learn more about organic pest and fertility management but this theoretical and top-down approach often discourages them.

One positive impact of the project is student involvement, doing research in farmers' plots for their thesis. This new generation, coming from the city, seems to be more aware of the necessity to have a dialog with farmers, as they can't know everything, being young agronomists with little experience. What will probably help is that they are not necesary originate from former big landholder families, as it used to be one generation ago, before the land reform.

5.3 Context's crucial importance of organic farming development: can we decrease our dependence on external factors?

Trying to answer our central research question, this case study clearly shows that organic shift first comes from NGO incentives. But organic change is much more sustainable in time in case of farmers already being used to biological control, integrated soil and fertility management and other agro-ecological practices. In this case, there is a good basis among farmers and program staff but much communication is needed, in order to exchange knowledge and experience, as many farmers express the need to learn more. That is why technical assistance should change towards more participatory style.
Successful farmers, who get the same or even better yields as conventional, and who keep on farming organically in the long run, thanks to economical sustainability as well, are those with a complete organic system, including crops and animal farming for instance. Animal farming is not certified organic but it shows that fertilisation autonomy is one way to improve existing systems in the valley. Autonomy should also help in pest management and capacity building as well. Farmers who have never been employees before but have bought their land before or after the land reform are also more successful in organic farming, maybe because they are more independent in their decision making process. This example confirms the hypothesis that the *Haciendas*' culture plays an important role in the autonomy issue. However, it is impossible to omit the majority of the small farmers' historical dependence, from finances to decision-making, as it is only 35 years ago from the land reform, which was not made in a helpful way for small farmers to learn to be autonomous. That is the reality the organic project has to face in seeking more autonomy for them.

Chapter 7: Crossed analysis of the two cases: in the diversity of world organic agriculture

1. Two different cases

In order to compare and analyse the two cases, let's first recall their main characteristics.

Fig. 8: Characteristics of the two organic cotton projects in Peru

Site	High Jungle	Central Coast
Environment	Tropical, warm and wet, in sloping terrain	Arid, warm and dry, flat low land
Agriculture	Rain fed mixed cropping without chemical inputs	Irrigated mono-cropping, Green revolution heritage and Integrated Pest Management
Cotton	*Aspero* brown short fibre	*Tanguiis* white long fibre

Those two cases of organic cotton programs are very different from each other, in their agro-ecological and cultural characteristics. Organic shift can't mean the same for high jungle as for central coast farmers. Indeed, in the jungle, organic certification doesn't require so much change in practices, thanks to already diversified agrarian systems and no use of chemicals. On the other hand, coastal farmers are much more dependent on external chemical inputs and practise mono-cropping: organic conversion means much more change for them.
Another difference between the two cases is their source of financing. In the jungle, the northern European company Sustainable, which buys organic cotton, pays a local NGO CEDISA, for technical assistance to farmers and, for certification by a European body with an office in Lima. Farmers don't need credit for cotton growing, as seeds are given by the program and labour is shared in a non-monetary mutual help system.
On the Coast, the project is funded by a northern European NGO, *Hermanos*, with the long term objective to build a fair trade chain for textile world wide, including organic Peruvian cotton. This NGO contracted another international one, SIB, for technical assistance and also pays for certification by the same body as in the jungle. Cotton is traded by *Plata Blanca*, a small company funded by *Hermanos*, but with long term goal to be owned by farmers, organised in a co-operative. This small company provides funding for farmers, by buying their harvest in advance and giving them credit for inputs and labour.
So we can say farmers were already quite dependent on external inputs and credit on the coast whereas they were more independent in the jungle, as they are more isolated so more autonomous. In this context, what is the effect of organic certification in terms of dependence? That is what we are going to analyse later in this chapter, but let's now compare the two maps of actors.

Fig. 9: map of actors in the jungle

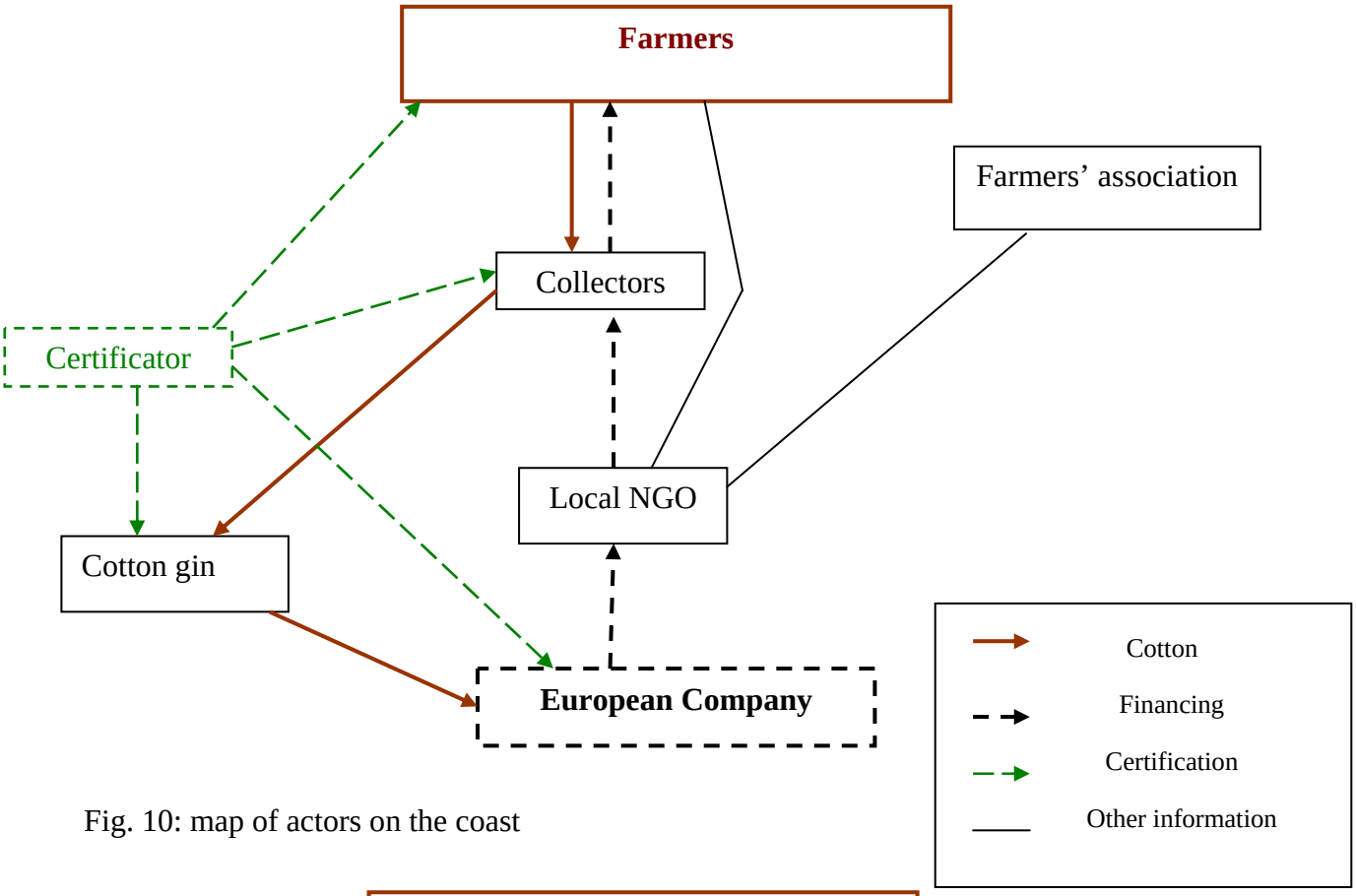
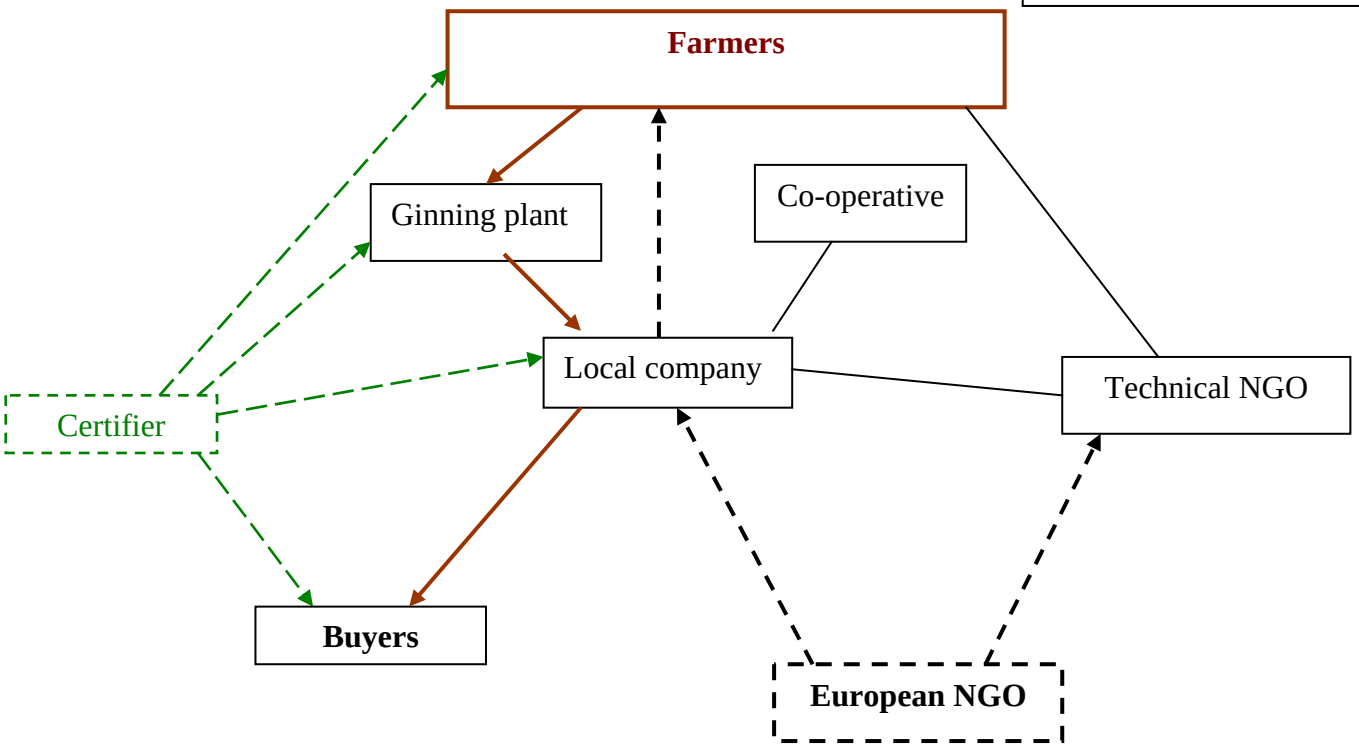


Fig. 10: map of actors on the coast



In both cases, NGOs play a central role in the organic cotton system and farmers' organisations remain rather isolated from the other actors. The main difference between the two projects is the nature of the funding body. In the jungle case, it is a private company who wanted to handle a socially and environmentally, trading naturally brown coloured organic cotton clothes. When it happened to be difficult to sell those products on the European market, this company stopped buying brown organic cotton from Peru, as it could not go on losing money. Then it started again and probably will interrupt ordering again in 2005.
On the coast, the organic cotton program is funded by a European NGO with the long term goal to build a sustainable textile production and trading chain. They went on financing Peruvian organic cotton production, although it appeared to be difficult to sell final products on the world market. For farmers, the coastal situation is far more stable in the long term but at a system level, one can question the sustainability of a project, still supporting organic cotton production when the barn is full of fibre bundles, still for sale. Project managers justified their choice to me : "Shifting toward organic agriculture and fair trade is an global process and it will require a long term view." But one can ask if their program actually heads to this holistic process, when it doesn't lower farmers' dependence, neither to external inputs and credit, nor to agronomists and kind of "boss" in their decision-making.
In maps of actors, the "other information" flows mainly represent technical assistance which means that agronomists and technicians give advice to farmers on their practices. As one technician told me on the coast : " farmers didn't study so we are here to tell them what they can and can't do in order to get organic certification." But those information flows are also about market demand. Indeed, NGOs took over State's role to connect farmers with the market, after public withdrawal of agriculture in the late 80's.
How can we explain the differences in the actors involved, in the two cases? As it was said before, coastal farmers have always been linked to foreign organisations, via market and development programs. The Peruvian State, as well as international institutions have put a lot of effort to support coastal agriculture as an export oriented one, to bring cash flows in the country. Moreover, as a pilot site for IPM in the 60's, State agencies and later, NGOs, have kept a development strategy, based on biological control and export crops. On the contrary, jungle areas have always been neglected by the Peruvian State and international development agencies, in terms of export crops. In this region, NGOs mainly work with natural resources management and conservation, and it is quite recent that some alternative development projects have come to support economical development against coca growing. It is unusual to see a private company coming directly from Europe, to develop certified organic cotton export, putting together environmental concern and export crop development.
Within those institutional contexts, let's now make a synthesis of the reasons why farmers chose to farm organically.

2. Crossed results of research sub-questions: Why do farmers convert to organic?

As mentioned in chapter 1, farmers' social behaviour (e.g. organic shift) is analysed in terms of Homans' sentiment, activity and interaction. Let's try to cross our results from both regions.

2.1 How do farmers justify their own choice about organic?

First of all, in both cases, farmers explain their decision by mentioning programs' incentives, which proposed better price for their cotton than the conventional market, and campaign credit on the coast, to them. However economical reasons are tempered by social and

environmental ones. They often mention some friends in the program, as farmers, technicians or agronomists, who gave them certain trust to try something new. Last but not least, examples of intoxication by agro chemicals among their family or their neighbours assisted in raising farmers' ecological awareness.
In the jungle, given reasons show a more local and personal vision of the world : "Mr. X came to incentive us to grow certified organic brown cotton." "It is our custom not to use any chemicals in farming." Whereas Coast farmers know about agricultural market globalisation, saying : "Importing countries now ask for clean and healthy products" "organic agriculture is the future of farming". So farmers' sentiments about organic agriculture concerns mainly economical aspects but they are not the only ones. Those sentiments come with farmers' vision of the world, from local to global perspective.

2.2 Consequences of the organic shift

The following tables show the agro ecological, economical and social consequences of the organic shift.

Fig. 11: Agro-ecological consequences of organic cotton production

	Jungle	Coast
Diversity	Increased with fruits and wood trees	Reduced due to pest management problem
Pest management	Local knowledge	Biological control development
Fertility	Anti-erosion measures	Organic matter (guano)

On the coast, organic farmers have lost bio-diversity in their crops because some vegetables were difficult to manage organically and also due to lacking organic market for them. It is obvious that no pesticide use has a positive impact on farmers and their families' health, but it is not the only positive consequence. Generally speaking, agro-ecological consequences of organic farming appear to be very positive.

Fig. 12: Economical consequences of organic shift

	Jungle	Coast
Price	Same as conventional this year	10 % more than conventional
Production costs	As low as conventional (seeds for free, mutual help system for work)	Not so clear, less inputs but more work
Rigidity	Certification unique buyer	Certification unique buyer and credit

It is clear that organic cotton programs haven't been able to ensure farmers' economical improvement in their situation. Main reasons for that are not so high prices and production costs probably still high on the coast, where more research is needed. With only one buyer and certification necessity, farmers lose flexibility in the market. We can say organic certification paid by the buyer increase farmers' dependence on the program or the company.
However, when prices are low, such a contract system can help farmers by price guaranties.

Fig. 13: Social consequences of the organic shift

	Jungle	Coast
Capacity building	Not all know the word 'organic' 2 cultural worlds linked by the NGO agronomist	Vertical communication Contacts with teachers, students and agronomists
Organisation	Exists but weak	Exists but lack of credibility (corruption)
Gender issues	Men and women work together in the field but almost only men participate in program activities	

Talking about social aspects, those three ones have caught our attention, among others. In the jungle, it has been a surprise to meet certified organic farmers indeed farming organically but still not knowing the word 'organic'. There have been capacity building programs but it seems that farmers and agronomists live in different cultural worlds, even further away from the buyer. The agronomist in charge was born in one of the villages, and actually makes the link between those worlds and translates the messages. The program is working then, but it doesn't give the farmers more autonomy. They are quite dependent on him indeed.
In the coastal case, there is a long history of vertical culture, which maintains farmers' dependence on technicians and agronomists. We can notice SIB European NGO, recently working on technical assistance, has brought new contacts between different actors from the production chain, for a change. But there is a strong custom to give formal lectures where farmers remain passive. This topic of capacity building especially catches our attention, as we are discussing it later. In both cases, farmers' organisations were created by the organic cotton program but they remain quite "empty" until now, as they lack legitimacy and influence on the process of organic farming development. We can notice that organic cotton programs haven't showed any positive change in gender issues.
Farmers' activities induced by the organic shift show positive results in terms of agro-ecology, but not so much in economical terms. Some social aspects are still on their way to be improved, as efforts in farmers' capacity building show, but one can ask if it is organic programs' objective to empower farmers.

2.3 Determining context elements in the organic shift

It is clear that the existing agronomic system in the jungle helps organic certification a lot, thanks to high bio diversity, extended local knowledge on pest management for instance, and to farmers' global vision of their fields. On the other hand, recent history of the coastal zone, with 1950's pest crisis and biological control development, until now, also help, even in a not so favourable agro-ecological context (high pest pressure).
But the main reasons for organic shift are found in the institutional context. Clearly, NGOs and companies are pulling the process, asking support from public institutions (ministry of agriculture, research and pest monitoring bodies…) who follow when there are agronomists interested in agro-ecology. But, as the manager of the funding NGO on the coast told me: "farmers convert to organic farming because a program came to incentive them". In this situation, programs actually select the farmers, so that they are not spread out in the region and also avoiding those more likely to induce conflicts.

Among contextual factors, the international market has a big role to play too. The whole organic cotton production chain is indeed dependent on market opportunities, through trading companies. When this research was done, Peruvian organic cotton seemed to be difficult to sell on this niche market. Short fibre brown cotton from the jungle is even more difficult to process and to sell and the company will probably not buy it any more the coming year. On the coast, they still have a lot of cotton fibre in stock. Price is high due to high production costs but the NGO goes on supporting organic cotton production, to help farmers in the long run, hoping to improve the system with experience. Marketing studies would be very helpful, with production costs studies too, on the coast.
To summarise it, farmers' interaction with the market, through NGOs and companies can mainly explain why they convert to organic agriculture. What does it mean it terms of dependence of those farmers?

3. Organic cotton and farmers' dependence

The results of this research have shown that organic agriculture is actually an opportunity offered to farmers by international NGOs and companies. This element helps us to understand why organic shift actually results in more dependence for farmers. What are the modalities of this dependence?

- Inputs

Especially on the Coast, many farmers still use a lot of inputs to grow cotton. Farmers have replaced the conventional products by their allowed equivalent, often advised by technical assistance. Although they are organic ones, such as manure, they are very expensive. This leads us directly to the second aspect of dependence.

- Capital

Those high input costs maintain farmers' dependence on credit to grow cotton on the Coast, as well as high labour costs. When farmers buy beneficial insects from a local lab or when they employ local workers, this money stays in the locality, instead of buying chemical inputs from multinational companies, but it still results in a certain dependence for farmers, in terms of capital.

- Market

As we could see in both projects, organic cotton development in Peru has to face a difficult niche market. Especially in the jungle, farmers have to pay market risks, as European buying companies can't sustain their order in the long run. On the coast, farmers have been protected from market risks so far, by the funding NGO who still buys their cotton although it can't sell it all, but until when?

- Capacity-building

There are some positive effects of organic cotton in terms of capacity-building but, nevertheless, there remain some gaps or discontinuities between farmers and technicians' perspectives. On the coast, some farmers have been trained in participatory workshops (Farmer Field School) but most of organic farming techniques are still taught in a rather vertical way. More than this, technicians prefer to be indispensable for biological control, instead of helping autonomous learning and decision making for farmers. Even so called

"group certification" that should be done by all members of an organic group, actually results in control from "above" (e.g. NGOs staff), in both cases. In the jungle, farmers know how to farm organically, but they don't have expert[4] knowledge about it, nor about international market and economical management. This general lack of capacities in management has some consequences on farmers' organisation in both cases.

- Organisation

In both cases, the organic cotton project has enhanced the farmers' organisation in an association or a co-operative. But both are not very successful in representing farmers in the decision-making process at project level. Executive board members miss the capacity and legitimacy to be able to fulfil the objectives, paradoxically set by NGOs in charge of technical assistance. One can ask what the real objectives of the projects are, when they ask farmers to organise themselves. With growing concern over social aspects from organic farming world institutions (cf. background of the research problem), it gives a good image of the project indeed to have a farmers' organisation, whatever it does in reality. Farmers may not be involved that much in the decision-making process, also because it makes it slower, especially when they are not trainned. Peruvian educated staff may not see farmers' participation as useful, due to their *hacienda* tradition. They think farmers are not able to participate because they are not educated. And as we have seen before, farmers usually comply with this cultural trend anyway and think they are not able.

So we can see physical (inputs, capital and market) and social (capacity-building and organisation) aspects in farmers' dependence, are even enlarged by the organic cotton project. Organic agriculture has started as a counter work to Green Revolution modernisation, as we have shown in the theoretical background of this research. In this particular case of Peruvian cotton, we argue it has almost become a neo-colonialist system by enhancing bigger farmers' physical and social dependence to national and northern elites. In that sense, it can be compared to main stream development. One illustration of this phenomenon is institutions' adaptation of their discourse in favour of organic agriculture with hardly any change in their practices. Organic agriculture has almost become a compulsory commitment to get funding and international attention. Then, it has been partially disconnected from local farmers' reality.

4. Organic agriculture partial connection with farmers

As we have said in our theoretical background, organic agriculture comes from a (post)modern idea of agriculture, that should be environmental-friendly and help local farmers, in reaction to green revolution and its negative externalities. It acknowledges positive sides of both so-called traditional (low-inputs diversified) and modern (biological control) agricultural systems, based on Altieri's concept of agro-ecology. Agro-ecology advocates high farmers' autonomy, in inputs, capital and knowledge, to be adapted to a particular ecosystem and socio-cultural context. By this, it proposes an alternative (a counter work) to globalisation, which tends to uniform agricultural systems and make them more dependent on inputs, capital and scientific knowledge. As part of agro-ecology paradigm, certified organic agriculture is an answer to environmental economists' call to include externalities in agricultural products' prices.

[4] Farmers know how to manage pests but they don't know their scientific names, nor eco-system general theories. They have empirical knowledge about it.

But in the case of certified organic cotton in Peru, we have found that it has even deepened farmers' dependence on external physical and social factors. Here comes a contradiction with the autonomy principle exposed before. How can we explain the observed discrepancies between principles and practices in organic cotton?
Maybe cotton is a particular case in organic agriculture, as a typical colonial cash crop in world history, and as a non-food agricultural product. Obviously, it is much more difficult to sell organic cotton than organic food because the health argument for consumers is not so strong as in case of eaten products. Moreover, the world cotton market is known to be versatile due to its link with fashion and it has some consequences on organic cotton niche market as well. This high market orientation makes organic cotton farming an opportunist decision, rather in the short term and therefore, quite risky in terms of dependence.
Another particularity of this case is Peruvian cultural context, from big *haciendas* history. Both smallholders and more educated technicians or agronomists still follow this hierarchical pattern. It makes some obvious contradiction with the idea of autonomous farmers and their obligatory participation in the decision making-process. In Peru and in cotton, there is an history of farmers' dependence.
Another explanation to this gap between discourse and practices is more general contradiction between vulnerable farmers' short term strategy and long term holistic requirement of organic farming. When the organic cotton project isn't able to guarantee a premium price, nor regularity in its demand, poor farmers may not feel secure enough to deeply change their practices towards long term sustainable practices, especially when they are in a vicious cycle of vulnerability, as we have shown on the coast.
Lastly, organic cotton development is clearly demand driven as we have seen in our study of farmers' reason to shift to organic. In this case, some consumers and Northern companies are asking for ecological clothing but do they really want to pay more than the conventional price for it? What seems to matter there, is more the security to get a "clean" product (environmentally and socially speaking) than the real situation of small cotton farmers in Peru. Indeed commodity has become more important than farmers. Is it "commoditisation", as Arce and Marsden (1993) calls it? And is this something new? It is clear that globalisation in agricultural products trade has distantiated consumers from farmers, called 'producers' then, as if their activity could be reduced to provide the product, or commodity on the market. Cotton has always been an export cash crop anyway, at least on the Coast. So it may not be new that commodity matters more than farmers. The thing we can notice is that organic agriculture didn't manage to change this pattern so far. It has even reinforced it by giving an extra value to the product with certification.

Here are some elements to explain this discontinuity between autonomy discourse and dependence practices. To go further, we can also question Altieri's principle of autonomy.
Isn't society based on relations between actors? Total independence is obviously not reachable nor desirable for small farmers whom Agro-ecology claims to help. But what may make a difference is probably a power balance in those interactions between farmers and other actors in the field. Here we have a clear case where commoditisation gives very little space for farmers' empowerment through capacity-building and organisation.

In this organic agriculture dilemma, between market integration and self-provisioning strategy to improve smallholders situation, the Peruvian government had to chose between different words to call certified organic agriculture. One experienced agronomist from the former *haciendas* system, specialised in biological pest control for cotton, argued for the term "*agricultura ecologica*"(ecological agriculture), which makes sense in Spanish, at least to characterise its agronomic aspects (Duthurburu 2000). But Peruvian politics have chosen the

word “ *agricultura organica*” (organic agriculture), inspired by the English word, although not really meaningful in Spanish. This choice shows clearly that the priority is to be easily identified by potential international customers on the agricultural world market, more than to make sense for those who practice organic or ecological farming.

Thus, organic cotton development in Peru shows us one of the partial connections brought by modernisation and globalisation of agriculture. There are some connections indeed between farmers’ reality and organic cotton project, in terms of farmers’ health, credit, premium price although not regular. But those connections are only partial as there exists a discontinuity between discourse and practices in organic agriculture.

Conclusions

In order to counterbalance the effect of globalisation on agricultural products exchanges, certified organic agriculture has been developed in both Northern and Southern countries. Certification is meant to guaranty organic production is environmentally and socially sound, so final products are worth their higher prices. More than pesticides free only, organic agriculture is based on agro-ecology principles, as Altieri (1989) has exposed them:

- High level of farmers' participation, so they can influence political and research agenda
- Cultural compatibility, with a wise combination of traditional and scientific knowledge about farming and ecosystems
- Ecological integration, with a diversification logic, for a better equilibrium and stability
- Economic viability, with low farmers' dependency on the State and industry.

Clearly, it means organic agriculture now has to take into consideration social factors, in order to improve the sustainability of farming systems.

In our study of farmers' motivation to convert, we have tried to compare those principles with farmers' perceptions of organic farming. How can we characterise the connections between the two?

Our two case studies illustrate the wide diversity among farming systems in the world, from traditional diversified self-provisioning systems which the Green revolution haven't touched, to highly intensified mono-cropping systems, beneficiaries and victims of the Green Revolution at the same time. Both cases have reached their limits: In the jungle, population pressure makes the land rotation shorter and induces soil degradation. On the Coast, high use of pesticides has made pest resistance higher as well and farmers are tightened with debts.

Although quite different in terms of agro-ecological and socio-economical contexts, those two cases have shown similarities in terms of results to our question. Farmers convert to organic cotton production because either an Northern company or an international development program has come to propose them a premium price for their cotton, grown without pesticides nor synthetic fertilisers. Beside this promise of a better price, experiences of intoxication by pesticides and pest resistance in the long run, but also lack of cash resource and tradition have influenced farmers to ban them from their field. In this proposition from a development program (or a company via an NGO), existing relation between staff and farmers have also influenced farmers' trust to decide to convert to organic.

As we have seen, the first reason to convert is the promise of a better price, but this does not necessarily mean a better income, nor a better livelihood situation in general. As the consequences of the organic shift have showed us, organic cotton in Peru has had positive consequences on the environment and farmers' health, but has had difficulties to improve their socio-economic situation. Main trends of those limits in organic cotton development can be summarised as: DEPENDENCE.

Farmers' conversion to organic agriculture is first dependent on the context, and especially on organic development programs. Within the context, international market demand plays a prominent role and we could see that organic cotton projects haven't managed to protect smallholders from market and economical uncertainty. Farmers' conversion to organic agriculture actually makes (or keeps) them dependent on external organic inputs and credit on the Coast, and on expert knowledge about agronomy and economics. One has to know particular Peruvian history where smallholders have been under authority of big landowners and more recently, agronomists and impresarios, in a rather hierarchical culture, especially in the case of an export crop like cotton. Therefore, farmers' empowerment through organisation and capacity-building has to face strong resistance to change, from the actors themselves.

Organic cotton farmers' organisations have remained quite weak and empty until now. Farmers' capacity building suffers from huge cultural gaps, or disconnection between farmers and experts, which leads to top-down communication and short simplification. Technicians and agronomists on the field make the connection between two "worlds": farmers' reality and international expectations about organic products.

Thus we can talk about a partial connection, mainly between organic production and consumption sides. As Arce and Long (2000) use Strathern 's concept of partial connection to analyse modernities and its counterworks, "The degree and the quality of organising processes are dependent upon the partial connections and the intensity of experiential configurations that reveal the ways in which actors tend to bridge gaps, juxtapose ideas and practices and engage in displays and performances. (…) Actors' informal contacts, their use of existing institutions, how they diffuse information, exchange experiences, participate in discussions, meetings, celebrations and religious ceremonies, and share and counterpose their perceptions and ideologies about the world around them make up these bundles of experiential partial connections." The case of farmers' choice to convert to organic farming or not, or to quit after a few years, as we could observe in the field, can be seen as an example of partial connection. Thus, "commitment then is not a 'compulsory' moral social act (…). It must be seen as part of everyday choices of individuals (for example concerning labour, technology or the use of natural resources) that replicate and proliferate notions of tradition and modernity in a variety of social forms, while regularly, may not be similar and, if similar, they may not be regular." (Arce and Long 2000) Talking about commitment, organic cotton comes from both alternatives to pesticides researchers' commitment and consumers' demand for "clean" ecological products. But market appears to be very versatile and it is therefore threatening the whole long term process sustainable agricultural development would require.

There comes again organic agriculture's dilemma between market and sustainability. This dilemma does not only occur in the South. Looking at rapid organic agriculture up-scaling in the United States, Goodman (2000) says: "Widespread dependence on external purchased inputs from specialist suppliers supports organic mono-cultures, in flat contradiction with agro-ecological lore, and a cynical regard for the philosophical and ethical foundations of sustainable agriculture."

Raynolds (2000), in her article called "Re-embedding global agriculture: The international organic and fair trade movements", concludes: "The international organic movement has undoubtedly achieved some important environmental gains and raised consumers consciousness regarding the hidden dimensions of industrial food production." But, according to her, "fair trade movement raises a more fundamental challenge to the conventional agro-food system, due to its emphasis on creating more equitable and sustainable relations of exchanges as well as production. [She] argues that theoretically it is in the process of capitalist exchanges that commodities become abstracted from their human and natural roots, so that price becomes their dominant characteristic. To socially and environmentally re-embed agricultural production would thus appear to require not just alternative products but alternative marketing links. " Indeed, what this story about organic cotton in Peru shows us is that no matter the label, commodities are still more important than the farmers who have produced them.

However, the studied Coastal project is both organic and fair trade and it tends to lower farmers' dependence on the international market, at least for a while. But are NGOs meant to trade commodities on the world market? In the case of organic cotton, neither the private sector nor the co-operation one are able to sell their products in the long run anyway. At least, what this study shows is that organic cotton projects have influenced non-organic agricultural systems around them as well, in terms of IPM, fertility management and farmers and

temporary workers' welfare. It has contributed to build new links between farmers, development agents, impresarios and researchers, following the pattern of partial connections. Maybe organic certification is too risky for smallholders to be up-scaled, as market doesn't seem to follow. But agro-ecology contribution still has something to contribute to improve their livelihood situation and therefore, proposes some alternatives to Globalisation.

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