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Which model of organic food chains could satisfy sustainability?

Flavie CANNELLE



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Department of Plant Sciences (IPV)

Norwegian University of Life Sciences (NMBU)

P.P box 5003

NO-1432 Ås, Norway

Course Code: M30-IPV



Agriculture Engineering School of ISARA-Lyon

Agroecology department

23 rue Jean Baldassini

69364 Lyon Cedex 07, France



Agriculture Engineering School of Purpan

75 voie du T.O.E.C. - BP57611

31076 Toulouse Cedex 3, France



Author

Flavie Cannelle

NMBU student number: 983110

flavie.cannelle@gmail.com

Supervisors

Prof. Geir Lieblein (NMBU, IPV);

Dr. Anna Marie Nicolaysen (NMBU, IPV);

Prof. Aline Dumont (Purpan, economic and management department)

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Abstract

During the second half of the last century, organic agriculture and consumption increased tremendously. Organic distribution developed first through alternative food networks connecting mostly farmers directly with consumers while today most of organic purchases are done in conventional supermarkets. These globalised food stores don't fit with the spirit of organic food production and sustainability whereas alternative food networks struggle to embrace all types of consumers. This study aims at giving concrete tools to convert or set up food chains turned towards sustainability and stakeholder satisfaction. The research is based on practical work and participatory observation with Pronatura, a French organic fruit and vegetables retailer, leader on the European market. I collected data through interviews with professionals in the company and observations in the field. The experience of setting up a subsidiary firm in Spain has been useful to be confronted with the reality of the sector. The analysis of documents and surveys of the company completed the data collection. The results show how different tools may be strengthening the sustainability of the food chain such as production planning, platform decentralization, farming contracts, diversified small-scale suppliers and spaces for stakeholders to meet; give feedback and take decisions. These tools impact directly our indicators of sustainability which are: economic profitability, transparency, information flow, power balance, trust and environmental sustainability. This work confirms the possibility of building sustainable food chains satisfying all the stakeholders involved.

Key words:

Organic distribution, food chain, sustainability, stakeholder satisfaction, organic market, supply management

INTRODUCTION

I. The roots of organic farming, its promises to consumers' expectation

Organic agriculture started as a reaction to industrial farming systems which had faced crisis regarding soil degradation, water pollution and a decrease in the food quality. The goal of organic farming was to go back to natural principles based on natural cycles and natural soil fertility (VOGT, 2007).

However organic agriculture goes beyond the fact of not using pesticides and chemicals fertilizers. The International Federation of Organic Agriculture (IFOAM) has sustained different values such as health (of plants, animals, soil and humans) and ecology (respecting natural cycles and basing the agricultural system on them). It also underlines the principle of fairness that organic food should show and a role in stimulating local economy (IFOAM, 2007).

Organic agriculture and its consumption invite the consumers to participate in environmental preservation, to improve their own health and to support better living conditions for workers and farmers. These objectives are also the ones targeted by the green consumerists that want to make a vote for a change and for more sustainability through how they spend their money (ALLEN and KOVACH, 2000). Consumers who purchase organic food are looking for nutrient content, the fewest possible food additives, absence of health harming substances, environmental friendly production, taste and freshness (TORJUSEN et al., 2001). Consumers expect something different from organic food than from conventional products and this has consequences for the way organic food should be produced and distributed.

II. The change of scale in organic agriculture and organic consumption calls for new food systems

The organic way of cultivating was in the middle of the 20th century followed by some farmers refusing mainstream agriculture production based on new technologies and inputs to increase the yields. Organic farmers were seen as marginal people and they were not supported by governmental institutions but had to find their own way in order to reach consumers (DE SILGUY, 1994). Nowadays, organic agriculture is produced on more than 37 million hectares throughout the world (0,9% of arable lands), is present in all continents and reached 54.9 billion US dollars of turnover in 2009 (money spent by final consumers for organic food) (HELGA and KILCHER, 2011).

Over the last years we have been witnessing a change in scale in organic farming with an increase in consumption and popularity. In fact, organic purchases have grown over 20% per year between 1995 and 2000 in the US, becoming a fairly large business. In Europe, organic

consumption increased by 8.9 % from 2010 to 2011 (AGENCE BIO¹, 2014). To meet an increasing demand for organic food, organic farms scaled up to increase the capacity of production. New farmers who were not convinced at first of the system asked for organic certification for economic rather than ideological reasons. It's not only scales which are changing but also practices. Organic agriculture has its roots in a holistic philosophy, taking into account the whole food system. More and more organic farmers have a tendency to simplify the system, specialising the production to be able to invest in specific machines and make the production simpler. The consequence of this is an increase in farming inputs and a substitution of natural resources on the farms (such as animal manure for example) by inputs from outside made from mineral or biological matter (DARNHOFER, 2010, DE WIT and VERHOOG, 2007).

A change of scale in the organic production and consumption requires new ways of distribution in order to preserve social and environmental organic principles, while offering accessibility to consumers.

III. Organic distribution

a. Alternative food networks to fit organic principles:

The aim of organic would be to focus on small-scale farming and to maintain a connection to the land and with the consumers who are concerned with the authenticity and origin of the food they eat. To achieve this goal, the food chain would have to be shortened and localised so that people would eat the food as close to their home as possible. This is justified for environmental reasons because it contributes to reducing the food miles. It also contributes to community building by stimulating the connections between consumers and growers. It raises awareness around food and makes a feedback possible to happen (SEYFANG, 2006). Alternative food networks rose among consumers giving an answer to these challenges. There are farm shops, box schemes, community-supported agriculture (ABBOTT CONE and MYHRE, 2000), home delivery and other innovations in distribution. These initiatives are created in resistance to large producers and retailers, according to Watts (WATTS and al, 2005). These alternatives would bring transparency to the consumer from the production and through all stages of the food chain, leading to more trust between stakeholders. All the stages benefit from value-laden information (origin, way of production, and quality assets of the product) (IBERY and MAYE, 2005). To gain that, it is important to limit the number of nodes between the first producer and the final consumer (RENTING and al, 2003).

Farmers have been dispossessed of their independence in their choice of their products' destiny. They are now squeezed between different external forces (MORGAN and MURDOCH, 1999). Alternative food networks should also be a chance for farmers to lower the pressure on farm incomes, by going out of a strict logic of offer and demand and slowing down the race for mechanisation.

¹ French national platform for information and actions on organic agriculture and consumption

Lind remarks that organic distribution needs a social spirit. If organic production is seen only as a technical and ecological merit it has little hope to succeed in a meaningful way (DE LIND, 2000).

Organic distribution is facing a several challenges. Alternative food networks have to combine sustainable organic supply well remunerated with consumer's accessibility. Food chain management also has to preserve connections between the two extremities of the food chain, leading to a meaningful and sustainable consumption (COLBY, 1995).

b. The reality of organic purchase:

When we look at the organic consumption data, we see that most organic food purchases are made through supermarkets or organic food stores. For example, in Spain in 2014 36% of the organic sales have been made through supermarkets, 45% in specialised food stores and 19% through direct selling (farmers market, Community Supported Agriculture (CSA), consumer cooperatives and shops on the farm) (MAGRAMA, 2015). CSA systems for example, provide food for a tiny part of the population for example. Only 0.01% of the U.S. consumers are members of CSAs, according to Stagl (STAGL, 2002). In France, 69% of the consumers would like to buy organic products in supermarkets whereas only 41% would prefer to go to farms or farmer markets, and 20% to specialised shops (AGENCE BIO, 2014). Even if the majority of the consumers like the links created by direct selling, there are few who are making the effort to change from the conventional way of shopping, where they find everything from all over the world, to go directly to the farmers to find local or regional products.

c. The limits of existing alternative food supply

We underlined that alternative food supplies contribute to a small part of organic food consumption. However, without an increased availability of organic products reaching all kind of people, organic food would have remained a "fancy diet" for privileged people from an economic point of view (selection by incomes) and a social point of view (people who got sufficient knowledge about food and agriculture in order to make the effort to obtain quality food) (ALLEN, 1999), (GOODMAN, 2004). Instead, organic agriculture is pointing out the idea of equity in its philosophy (IFOAM, 2007); equity for the farmers but also for the consumers. Moreover, the local organic supply chains suffer from a low diversity of products especially in low production season which is frustrating some of the consumers. The alternative food systems discussed above don't fit all organic consumers. Other innovations have to come to answer the multiple purposes of organic distribution and meet the needs of the consumers.

d. The impact of the distribution on organic agriculture:

The trade of organic products in global markets are distributing more food than alternative food chains. They have led to an amazing increase of organic agriculture which today covers more than 37 million hectares in the world (AGENCE BIO, 2014). Organic food doesn't gather only activists but it draws the attention of a large part of the population. In France for example, 75%

of the consumers consume organic food on a daily or occasional basis (AGENCE BIO, 2014). This contributes to a general change in their way of consuming and a stronger feeling of responsibility in their eating habits. It is this organic movement which will bring a real change in the whole society towards sustainability by giving the opportunity to consumers to think about the consequences of their purchases (ALLEN and KOVACH, 2000).

However, the trend in the last decades of general food markets is not compatible with organic principles. Supermarket chains have led towards product standardisation, anonymous food, costly added values along the chain and internationalization of markets. This organic food distribution doesn't question consumers about the sustainability of their food habits anymore (STAGL, 2002).

Organic labelling will no longer be enough to create a sustainable agri-food system, meaningful from the production to the distribution. Organic agriculture needs innovative strong actors involved in food chains to answer the challenges of a sustainable organic food supply.

IV. Conclusion towards the research question

The literature shows that there are contradictions between organic agricultural principles, actual practices and distribution. If organic agriculture was first marginalised, defending small-scale farming and self sufficient farming systems, it had to evolve to meet the growing demand. The distribution of organic products started through direct selling and other alternative food networks because they answer many organic agriculture challenges: connexion between farmers and producers, the fairness for the farmers' incomes and decision power and seasonal based food.

However, in Europe, where organic production and consumption is well developed, there is a small quantity of organic food which is purchased directly from farmers. It underlines the gap between consumers' desire of knowing where the food comes from, supporting local farmers and the act of really changing their way of shopping. Alternative food distribution may cut itself from external influences and propose too extreme solutions that don't embrace the whole group of consumers (VORLEY et al., 2007).

The organic agriculture model will have difficulties to expand if it keeps a dogmatic position only focused on local and direct selling. However, conventional food chains focused only on economic benefits without encouraging consumers' food knowledge, product diversity, value based agriculture and transparency, won't lead to a meaningful expansion of organic production and consumption. We need innovations in new creative food chains to democratize quality food and answer economic, environmental and social challenges of organic agriculture. Organic distribution is increasing tremendously and concrete tools are needed to create and maintain sustainable food chains.

This study is focusing on organic distribution, involving several actors in addition to producers and consumers, because it is the model which is the most appreciated by consumers in the

sector of organic. It aims at proposing real tools to reach sustainable food chains dealing with the reality in the field.

To approach reality, a field study has been carried out with the French company Pronatura which is a leading retailer within organic fruit and vegetables. This is a particularly interesting case, because Pronatura has been working with organic products since the beginning of an organic market in France. They are trying to follow organic values and principles, even if today they are one of the biggest companies of the sector.

Which model for organic food chains could satisfy sustainability? A case study of Pronatura; an organic fruit and vegetables retailer in France, and its new subsidiary firm in Spain.

METHODOLOGY, MATERIAL AND METHOD

I. General methodology

a. The structure of the study

This study aims at exploring opportunities to reach a sustainable food chain involving several intermediaries between producers and consumers. This food chain would satisfy all the stakeholders in the system: farmers, retailers, final distributors and consumers, and serve as a meaningful development arena for organic farming.

Sustainability will be defined as the consideration of the three following components: economic, social and environmental.

The results in this paper are based on an internship with the organic fruit and vegetable retailer Pronatura. A general study of the French company has been conducted at the national scale and an implementation of a subsidiary firm has been followed in Spain. This information is completed by literature reviews related to the topic.

Table 1: General methodology with the sub questions asked under the research question

Questions raised by the research topic	How to answer the question?	Method to answer the question
What are the customers and final distributor's expectations regarding organic products?	Identifying expectations of consumers and distributors about organic products.	Interviews with professionals of the company, analysis of satisfaction surveys and interviews with managers of organic shops in Spain. Literature review of customers' expectations.
What kind of tools and farming models are needed to set up the base of a sustainable food chain?	Building the farming supply chain in order to satisfy customer expectations and to reach sustainability.	The case study of the development model of the food supply applied in Spain Literature review on sustainability criteria and food supply.
What are the strengths and limits of Pronatura's model in France?	Underlining useful tools and limits for a sustainable organic food chain.	Value Chain Analysis (VCA) of Pronatura in France to analyse the sustainability of their model

b. The field work and other material

The results are mainly based on the case project of Pronatura aiming at developing a sustainable food chain in Spain. Thus this field research explores the different methods used by Pronatura and the preconditions needed to reach sustainability. It seems very appropriate to supplement conceptual work with explorative empirical research based on experience. The field study is based on two components:

- The analysis of the sustainability of the food chain developed by Pronatura in France, a company with 30 years of experience within the field. A step back has been taken to identify the strengths of their model but also its weaknesses.

- The construction of a subsidiary firm in Spain. We experienced the different steps of the construction of the new activity. Through this process the application of methods found in literature or developed during the internship have been verified in the field.

The research was carried out during the summer of 2015, in the major French platform of the company for half the time of the internship. A platform is the place where fruit and vegetables are collected and stored before being packaged and sent to clients. In the main platform situated in the south east of France, all the departments of the company are based, namely commerce, accountability, finance, supplies and logistic. It is also where the decision makers of the company are working. For the other part of the internship, I worked in the field in Spain where a new platform was planned to be set up. My mission consisted in making a market study

among organic food stores in Madrid region and creating a farmer network in order for the company to have Spanish suppliers.

I used different methods such as interviews and questionnaires addressed to actors of interest (detailed later in the methodology) in addition to participant observation, while working for the company. Participatory observation is often applied in market studies because it answers the need of comprehension for a beginner in the sector (SCHIEB-BIENFAIT, 2010). In fact, being immersed in the studied system was really important in order to get into the network, to identify the key actors and to understand the functioning and dynamism of the whole system. It also enlarged my vision of the system and enabled me to take into account external influences (RITCHIE and LEWIS, 2003).

Field-work is completed with literature research about food chain sustainability and consumption studies. These publications give us a solid scientific base to help us understand the sustainability of the different components of the food chain.

II. Tools to study consumer expectations

For a retailer it is important to get the opinions of its direct clients. In this case we based our results on a study of organic stores in which I interviewed the owners or the managers, in the region of Madrid, Spain. Eight shops were visited among the 35 which were registered in the area. The representativeness of the study is based on the geographic distribution of these shops in the studied area because different types of consumers have been found to be depending on the area. (In the table below are the areas of Madrid and their characteristics).

Table 2: Interviews with actors of organic shops in Madrid

Name of the shop where the interview was conducted	Suburb of Madrid where the shop is situated	Function and characteristics of the interviewed actor
De la tierra	Justicia	Couple of 40 years old approximately being at the same time owners and managers
La biotika	Centro	Man, 25 years old approximately, both salesman and supply manager
El Mercado bueno	Salamanca	Man, 40 years old approximately, both owner and manager
La Milana	Norte	Woman, 40 years old approximately, both owner and manager

Economato Macabeo	Norte	Man, 30 years old approximately, both salesman and supply manager
El rayo verde	Lavapiés	Woman, 40 years old approximately, both owner and manager
Ecotienda	Salamanca	Woman, 30 years old approximately, saleswoman
Marabunta	Lavapiés	Woman, 30 years old approximately, supply manager



Figure 1: Map of Madrid City and our suburb breakdown

Semi-structured interviews have been chosen in order to make sure that specific information could be gathered. Semi-structured interviews also give the opportunity to the participants to come up with themes that are important to them concerning their expectations about the products and their suppliers.

The themes discussed in the interviews with the organic shops were:

- their description of what organic products should be,
- their interest in local food,
- their priorities between prices, quality and origin.

The transcribed Interviews have been analysed through a thematic analysis of content. Questions were focused on fruit and vegetables, but they could be extended to other products because shops have the same concerns and ethical requirements for all their food choices to be coherent.

During the field work I did not have time to conduct a survey with the final consumers who are the final stakeholders of the food chain analysed. Organic consumption has already been well

explored though, by for example TORJUSEN et al., 2001; HARPER, 2002; Mc EACHERN & Mc CLEAN, 2002 and by the organisation AGENCE BIO in France. Their results are informing us and mentioned in the results and discussion.

The objective of the first part of our study is to understand which expectations consumers have to organic food in order to build a food chain suiting them. This is an important factor in order to reach for economic sustainability. In fact, customers have to be satisfied with their purchases in order to go on and give stability to the company (FEARNE and al., 2012).

III. Selective criteria to choose the suppliers

The base of a food chain is the first link who are the farmers in this case. Thus, a food chain may be considered sustainable when producers are meeting sustainability criteria and consumers' expectations. In this case producers also have to meet Pronatura's requirements to make commercial relations satisfactory for farmers and for the company. To understand these requirements, I conducted an interview with the director of the supply which complemented participatory observation. The aim was to come up with a realistic method to choose producers supplying sustainable food chains.

During the field work, Pronatura wanted to set up a subsidiary firm in the region of Madrid with a national supply of fruit and vegetables. During our process of developing a sustainable food supply we came up with a process of how to select producers in the country who were fulfilling all the sustainability pillars.

An interview guide was established and used with the 33 farmers that I visited. The guide describes the whole farming system through qualitative and quantitative data (please see appendix n°1). The information is classified through different themes, which are:

- general information of the farm,
- details of the current production of organic fruit and vegetables,
- the farming practices,
- the capacity of storage to preserve the quality,
- their current channels for sales,
- the potential they have to work with Pronatura
- the logistics they have for transportation.

Six criteria have been established to be able to compare the different farms. They are presented in the results. Each of these criteria has been evaluated with a mark from 0 to 5. This process I created is mainly based on exchanges with professionals and on participant observation during the field work. It has been necessary to understand the main objectives and imperatives of the company concerning the supply. The methodologies found in the literature are often very focused on one aspect of the farm, for example environmental impacts (VAN DER WERF and PETIT, 2002) and do not embrace the whole complexity. The field work has been a real

opportunity to verify our methodology to select farmers, which is taking into account stakeholder expectations and sustainability requirements. The selection of the criteria is the consequence of the different expectations and requirements of the stakeholders: the professionals of the company, the final distributors and the customers. As a facilitator my work consisted in combining the different stakeholder's expectations and requirements and translating them into selection criteria.

Literature about sustainability indicators has been used such as environmental sustainability and the following articles are cited: (BRROWNE and al., 2000), (PERI, 2006), (ROHR and al., 2005), (MOSKOWITZ, 1995), (VAN DER WERF and PETIT, 2002), (DARNHOFER et al., 2009).

In total I conducted interviews with 33 producers in Spain before evaluating the six criteria describing their farming system.

IV. Identifying strengths and weaknesses about sustainability

a. The data collection

Understanding the whole system through participant observation in the company has been useful. It contributed to my understanding of the global food system and helped me to identify the opportunities for changes (HENDRICKSON and HEFFERNAN, 2002).

Pronatura is one of the first companies in France who worked with only organic products. Organic food chains were not organised at the time they started up so they had to develop their own system, and their own tools in regards to the relationships and organization they have with the farmer suppliers and the clients. For this reason, it is particularly interesting to look at their innovations within the food chain in a critical way and regarding its sustainability.

A retailer company presents complex challenges coming from the different interactions among the stakeholders. The understanding of this complexity has been found through participant observation in the company. It has been carried out during the six months of the field project by working inside the company and interacting with the employees.

The participatory observation has been completed with the interviews of three key actors of the company, in order to collect data on the specific practices of Pronatura's management of the supply chain. These three actors cover the main fields of the company for the track of the product which are the supply and the sales. Semi-structured interviews were chosen because it corresponds to the need of asking about what was interesting for the study (themes are detailed in the table below.) But interviewed participant still had the possibility to talk about other ideas that were important to them, related to Pronatura's model and sometimes unknown to me (QUIVY et VAN CAMPENHOUDT, 1995). Through these interviews they spoke about the keys of Pronatura's organization and the particularity of their strategy within the food chain.

Table 3: Actors in the company I met for interviews, their function and the themes I discussed with them

Person met	Function in the company	Specific themes approached
Thomas Candusso	Director of supplies	<ul style="list-style-type: none"> - Management of fruit and vegetable supply - Politics of supplies and its sustainable components - Strengths and weaknesses in fruit and vegetable supply - Relationship between the company and the farmers - Information exchanges - Establishment of prices
Patrick Ophele	Fruit producers' technician	<ul style="list-style-type: none"> - Relationship between the company and the farmers - Company strengths and weaknesses in the fruit supply - General feedback from farmers towards company management
Fabienne Battini	Employee of the commerce department	<ul style="list-style-type: none"> - Relationship with organic store clients - Information exchanges with other departments of the company - Competition on the market

Due to time and cost constraints, clients and suppliers have not been interviewed in the fieldwork. On the other hand, I have studied a satisfaction survey led by an external company in 2015 in order to gather the opinion of clients and suppliers about Pronatura's management.

Of the 1308 requests sent out, 324 clients answered the questionnaire. The relevant themes approached for our study have been:

- their general satisfaction of the company,
- their feeling of proximity with the company and the possibility for feedback exchanges,
- the information available for them about products and origins,
- the reasons to choose Pronatura for supplies.

From the suppliers, 166 replies to the 369 questionnaire sent out are analysed. The themes from the questionnaires used in our data collection are:

- their general satisfaction with Pronatura and its principle reasons,

- their satisfaction with the management of supplies of the company,
- their satisfaction with the price received,
- their proximity with their contact person in Pronatura.

It is particularly interesting to study the percentage of satisfaction by type of farmers depending on their turnover. In fact, the satisfaction is different between small-scale and large-scale farmers.

Finally, a statistic survey of the producers, conducted by Pronatura in 2013 describes the type of farmers the company is working with. The collected data of interest for the study are about:

- the mix of their system (not all the productions are certified organic on the farm)
- the surface of land cultivated,
- the number of different varieties of fruit and vegetables
- their agricultural practices,
- the percentage of sales to Pronatura in their total turnover.

b. Analysing the collected data to explore the sustainability of the system

To analyse our data and the gathered information in order to identify the opportunities and limits for sustainability, a food chain analysis was used. It aims at testing the sustainability of the system through economic, social and environmental aspects, taking into account all the stakeholders involved (FEARNE and al., 2012). The objective is to highlight strategic and operational weaknesses and strengths in order to give information about what are the key tools for a sustainable food chain.

We choose here to analyse the whole value chain and not taking into account intra-firm boundaries because external stakeholders are influential in creating value. Moreover, we are interested in the whole food chain conception and not in the internal management of the company. Thus, we do not focus on the company itself, for example the employees' satisfaction, energy used, wastes management in the different platforms or other aspects of the organization.

A sustainable value chain analysis requires collecting data in the different fields of the system to prove or refute the sustainability of the food chain, taking into account all the stakeholders along the chain. The first methodology which has been used is one presented in Soozay's paper about an analysis of a winery food chain (SOOZAY and al, 2012). This pathway is focused on the main stakeholders but they are using relevant indicators fitting our study (presented in table 4 below). Another publication from Grunert presents four case studies in North Europe (GRUNERT et al., 2005). This paper brings other inputs to a value chain analysis by taking the problem from the point of view of the consumer and his expectations. It complements the precedent methodology and fits our study because it is market oriented.

These two main methodologies are used to analyse our collected data about Pronatura's system. They guided the selection of sustainability indicators, even if they have mainly been inspired by the data we had collected during the field work. The method to analyse the company's data is detailed below.

Table 4: Methodology developed for the sustainable value chain analysis

Aspect studied	Indicator	Material and method
Economic sustainability	=> Economical profitability of the company => The way the value is shared along the chain => Loyalty of stakeholders	<ul style="list-style-type: none"> - Analysis of the different margins along the chain - Study of the profitability of the chain and its tendency - Analysis of suppliers and clients' satisfaction through a satisfaction survey conducted in 2014 - Analysis of a statistical survey about producers conducted by Pronatura in 2013
Social sustainability	=> Flow of information => Transparency => Trust among stakeholders => Power balance => Decision making	<ul style="list-style-type: none"> - Interviews of employees and observations in the field informing a diagram of information flow. - Interviews, participatory observation and internal documents explaining specific organisation in the company - Analysis of content of satisfaction survey to farmers and final distributors
Environmental sustainability	=> Type of farmers supplying the company	<ul style="list-style-type: none"> - Literature review about environmental impacts - Statistic analysis of a data survey about suppliers, conducted by Pronatura in 2013

RESULTS AND DISCUSSION

I. Pronatura, an organic fruit and vegetables retailer

Pronatura is an organic fruit and vegetables retailer, established in 1987 in France. Whereas the organic market was not organised and rather marginal at the time, the company has managed to evolve, structure the market and stimulate the organic consumption since then. Pronatura is today a leader in France in its sector and has a turnover of more than 100 million euro per year. The company employs 175 people in France but has also employed people abroad to build exotic fruit supply chains. The fruit and vegetables, except the exotic distributed, are bought up mainly in France (70%), and the rest is predominantly from Spain and Italy. In France the company works with producers and cooperatives with who production planning contracts are set up. Abroad they don't develop this kind of cooperation because of a lack of time and initiatives. For exotic fruits the company has developed its own affiliated firms or buy to other retailers or large producers. Pronatura's clients are mainly organic food stores in France (68% of the turnover in 2014), second are supermarkets (12%) and third exportation (11%).

Since its creation, the company is trying to satisfy its two direct partners, who are farmers and organic shops, through offering services for them, taking into account the pillars of sustainability. Pronatura's importance in the market and its convictions for organic principles, make an interesting case study and a good starting point for discussing strengths and weaknesses of a food chain's sustainability.

Pronatura has five different platforms in France for reception of products and distribution to different clients. They developed a national net to be closer to the producers and the clients.

The focus in this study is the food chain between French producers and organic food stores because this is the main activity of the company. It is also with the national suppliers that the company developed the most interesting and innovative tools to manage a sustainable food chain.

II. Customers looking for quality, local and ethical products

a. Final distributor expectations:

Summed up, these are the different characteristics about each theme which I asked the owners or managers of the different shops:

- The characteristics of organic products expected: Shops owners or managers insist on the fact that organic products and especially fruit and vegetables should not be "ugly", with mud and a lack of freshness but we should expect the same aspect of organic products as conventional products. However, shop managers find that the food standards imposed in

supermarkets are too high. That's why they are more comprehensive on the aspect of the product. Organic products should be more nutritious and more diversified. They are expecting from their retailers a large range of heirloom varieties or heritage products which have been forgotten by mainstream food chains.

- Locality of food: They really wish to work with local farmers and are often doing so even if it's more complicated to organize the distribution. They like to shorten food miles to have fresher products with less impact on the planet. Some shops are also interested in sustaining the local economy.
- Priorities on price, quality and origin: The first thing that stores look into is not prices but this factor comes later on. The origin of the product is more important. They try to always buy nationally produced food and some even refuse to buy exotic fruits coming from abroad. They often refuse airplane transport. Most of them really stick to the seasonality of each product.

Through the interviews with professionals of the company they highlighted the importance of the landscape where the farm is set up for customers, and also the tidiness, the diversity of production and the portrait of the farmers themselves (age, dynamism, convictions...).

b. Final consumers first concerned about their health:

In a Norwegian study they found that the first factors considered in their choice for organic food was the nutrient content, the fewest possible food additives, the absence of health harming substances and then an environmental friendly production (TORJUSEN et al., 2001). On the 7th place came ethical and political considerations. We can remember four broad factors: healthy, tasty, environmentally friendly and ethic. We found as well in the literature an expectation from the consumers for "not intensively produced" food (HARPER, 2002). Thus consumers care about the food production methods even if it's not their first motivation (Mc EACHERN & Mc CLEAN, 2002).

Other studies confirm the customers' concern for food safety and the ethical aspect of the product. The fact that customers will prefer free range products and fair-trade for eggs for example indicates this correlation between health and ethic (HARPER and MAKATOUNI, 2002). A complete study of the "Agence bio", the organic agriculture and organic consumption organization in France, showed that 62% of organic consumers have a desire to protect their health, while 57% want to protect the environment. The Agence bio remarked that it is the environmental consideration which has been increasing the recent years (AGENCE BIO, 2015).

To conclude on consumers' expectations, we can say that the first concerns in their purchases are health and environmental costs of the production. But the ethical aspect is also important. More and more consumers are expecting more natural processes and a decrease in the intensity of production. Final distributors, in this case organic stores, are following these expectations and are willing to buy local and seasonal products. The price can't be out of scale but they accept to pay more for better quality and local products. Moreover, Pronatura has been working in this sector for 30 years and they realize that customers and shops have an idealistic image of a farm that they want to maintain by buying their fruit and vegetables

produced there. It is all these expectations on organic food which have to guide the selection of organic suppliers.

III. Building the food supply with adequate producers

a. Answering Pronatura's requirements, and final distributor and consumer expectations

People are choosing to pay more for an organic consumption because they are looking for something different. The "conventionalisation" of organic agriculture appears as a threat to future organic consumption because it doesn't correspond to the expectations that consumers have (DARNHOFER et al., 2009). Concretely, the supply chain has to start from the producers fulfilling the criteria supporting organic principles and consumers' expectations.

Considering the environmental cost of the farm, many methodologies have been developed, taking into account both qualitative and quantitative values (VAN DER WERF and PETIT, 2002). These complex processes appeared not to be adapted to the reality of developing a food chain because they are too complex and long.

The quality of products is also an important factor to take into account in the selection of suppliers because it is one of the major sources of satisfaction for final distributors and customers. However, it is difficult to define because it is a subjective matter (MOSKOWITZ, 1995), but the main characteristic of a product is the aspect and the overall liking (PERI, 2006).

Concerning the local characteristic of the products, it should be tried to work with the producers who are situated closest to the platform and the distribution to satisfy consumers with an interest in the concept of local.

The fairness and the ethic of the farming system is something difficult to evaluate. Some have explored "socially responsible sourcing" (BROWNE and al., 2000) which take into account working hours, occupational health, safety and fair remuneration.

The image of the farm is not something clients speak about but Pronatura realized that the customers and distributors have an idealistic picture of it. This concept covers the portrait of the farmer himself, his convictions and dynamism. It is also linked with the farming system: its tidiness, and the landscape around (natural area, diverse...).

Pronatura can't work with all types of farmers. The system they have doesn't fit very small scale and highly diversified farming systems because their cost of production is often too high for the prices offered. The company is looking for farmers willing to work with them, who has a capacity of adapting to new varieties and new ways of packaging. Finally, they prefer farms they can be proud of working with because they are environmentally and socially responsible.

b. Criteria developed in the field work

I tried to include all the characteristics mentioned above to select farmers fitting the following links of the chain.

The six criteria developed allowed us to describe the farms in a more efficient, simple and representative way. Then the score has been a useful tool to compare the farms and select in an objective way the most suitable for a sustainable food chain. Below are the six different criteria we used. The qualitative or quantitative data describing the criteria are the ones composing the interview guide (see appendix n°1).

-The image of the farm. Here are considered the farmer portraits, the landscape around (industrial area, natural, intensive agriculture...), workers' conditions and presence of conventional production outside the farm or inside the farming system. Here was also considered the distance with our targeted consumption area which was Madrid.

-The production of the farm. This section aims at evaluating the adequacy between the vegetable and fruit production grown in the farm and the needs of the company. This means the species grown, the varieties, the quantity produced and the seasonality of the production in the region.

-The quality of the products. Pronatura Company evaluates the quality of the products that can be offered by few components of the farming level. It is mainly dependent on the technicality of the producers in the packing and his care for the products. The quality is also highly dependent on the varieties chosen (heirloom or traditional varieties, non CMS²).

-The technical capacity of production. It evaluates the machinery, experience and knowledge of the producer to be able to grow fruit and vegetables in a rational way. In fact, it is important that the work of the farmer can be well remunerated with the prices the company can offer.

-Agriculture practices. The good ecological practices of farmers give a good image of the farm but also lead to a greater stability in the production by a more sustainable agroecosystem. The criteria are mainly the use of compost, a good rotation with leguminous, plant association, intensive use of plant protection, low degree of biodiversity in the crop land, and the presence of agroecological infrastructure (DARNHOFER et al., 2010).

-Farmer motivation. The desire of the farmer to work with retailers and its capacity of adaptation to new requirements, new crops and varieties, is essential for a long term work with the company.

2

Cytoplasmic Male Sterility: Seeds which have been genetically modified to not pollinating itself.

CRITERIA	MARK (/5)	Justification
Image	5	Family farming, long time of organic and biodynamic certification, diversified landscape
Production	4	Important volume of production but only for limon
Production quality	5	Exportation quality, demeter certification, good mechanisation for cleaning, calibrating and packing
Technical capacity of production	4	Important capacity for citrics, long experience, rigour in quality and organisation. Lack of experience for the rest of the production
Good agriculture practices	5	Compost, associations with leguminous, terrasses, biodynamic practices
Motivation to work with Pronatura	4	Want to develop their sales. Interested in distributing on the national market. They have already a large market in Holand and Germany who offer good prices

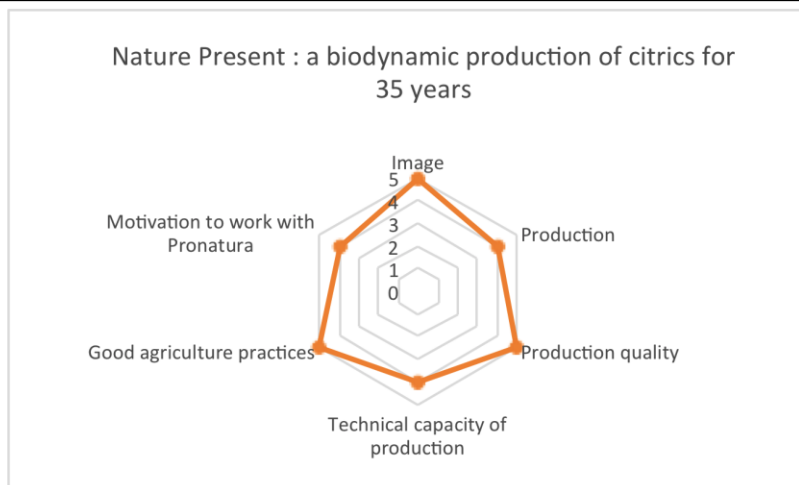


Figure 2: Example of the evaluation of a farming system for future suppliers of Pronatura

This method to select farmers has been found suitable. It takes into account the complexity of the farming system and answer the need for rapidity, simplicity without losing objectivity. However, the selection loose in precision compared with methods based on a complete study of each field of the farm (social, environmental and economical) following strict quantitative indicators. But these methods are not adapted to the mean of a company and neither to the expectations of the customers met during the study. To gain in objectivity it is relevant to have several auditors coming from different fields. It could be imagined to invite consumers or final

distributors to take part of this process. It would also reduce the distances between farmers and consumers and gain on transparency.

IV. A sustainable food chain analysis of Pronatura, an organic retailer since 1987

The food chain analysis is trying to judge the different actions and processes of a company on their sustainability which includes economic, social and environmental aspects. We are focused here mainly on the different interactions inside the chain abandoning the internal management of the company.

The stakeholders of Pronatura food chain are:

- The farmers supplying the company
- Pronatura company and its employees
- Organic shops
- Final consumers

The company works mostly directly with organic food stores in France. We decide to analyse only the process between French suppliers and French organic shops because the main focus of this study is a sustainable model of an organic food supply chain at a national level.

a. Economic sustainability:

Profitability of the system

The activity of the company is growing since its creation in 1987. It has a turnover of more than 100 million euro in 2015. It makes it one of the biggest companies in Europe for organic fruit and vegetable retailers (SOCIÉTÉ.COM, 2016).

Loyalty of its two partners

The loyalty of the two direct stakeholders of the company guaranties a stable supply and stable sales which means a stability of the turnover of the company.

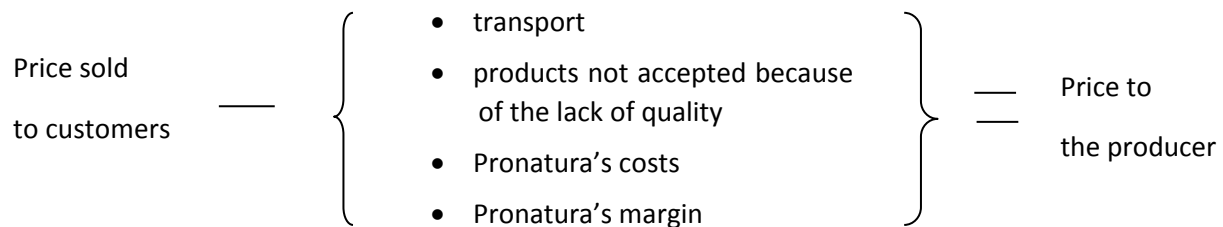
The company is maintaining a close relationship with its farmer suppliers. Their tools for that are the individual contact between the farmer and his buyer, as well as the practice of production planning especially appreciated by farmers. The upstream stability pleases the clients downstream thanks to the availability of products and choice which are offered to them. Working closer with producers and following them on the quality they get allow the company to offer better products to clients who will prefer the Pronatura Company to others.

On the same idea, Pronatura is offering courses to organic food stores to get better on the fruit and vegetable stand management. The aim is to get better at conserving the products and presenting them to stimulate sales. By this way Pronatura is building customer loyalty and increasing its own sales to clients. A satisfaction survey says that 94% of the customers are satisfied and shows that the company is benevolent.

The satisfaction of its two main partners is an important source of economic sustainability for the company.

The value shared along the chain

We expose here the case of the company when working with cooperatives. The price given to the producers is calculated from the price clients are ready to pay. This is function of the product availability on the organic market mainly. On these prices are withdrawn transport costs as well as the value of products the clients didn't accept for the inadequacy of the product with standard quality. This value of the products lost along the chain is charged to the producers in case at the reception in the company platforms, the people receiving the products didn't agree on the fact that the standard quality was reached. Then Pronatura removes 13% of the sales for its own running costs but also a variable percentage for its margin. Finally comes the price for the producers.



This value chain is often changed and adapted to the market context. Margins made by the company are not constant and even not proportional as it is usually practised by large retailers. When the prices are exceptionally low and not profitable for the small scale farmers the company is working with, they can even decide not taking any margin. In this condition, they are losing money with costs of transport and logistics. They agree with the producers that higher margins will be made on other products planned which have a better market situation. This can be done only if close relationship and trust exist between the supplier and the company.

The mainstream politic of prices based on the quantity of products available on the market is really risky in case of over production because prices are brought down. It makes high fluctuations on prices and doesn't represent the real work of the farmer. This is a real threat for the economic sustainability of farmers. But the producer survey shows that 177 of the 187 answers are selling through a short circuit some of their production which is independent from the law of supply and demand. Thus, they have some revenues that don't depend on the market fluctuation and are more stable along the year. At least Pronatura is not playing on its suppliers' competition to lower prices thanks to production planning: purchases are planned in advance so the fruit and vegetables offered by usual suppliers are not higher than what Pronatura needs.

A new component in the economic stakeholders: the shareholders

Since 2012 the majority of the company financial capital is owned by an investment fund. This is obviously exacerbating the focus on the economic growth of the company. In fact, each year they are looking at the financial results without looking at the general sustainability of the company. This is a major threat for the future orientations of the company.

b. Social sustainability

Production planning: a real tool to create trust, security and power balance for all the links of the chain

The quantity of fruit and vegetables that Pronatura will buy during a season is estimated each year to be able to guide the producers in their plantations and give them a security of sales. This is the result of a discussion between the commerce department and the supply department in the company. The production planning with each farmer partner is done before each production season (spring-summer and autumn-winter) and indicates to them for each product they are used to grow, the amount that Pronatura would buy per week and for which period. The satisfaction survey confirms that this management is really appreciated by the farmers. On the other hand, final distributors notice the large amount of references offered in order to please their final clients.

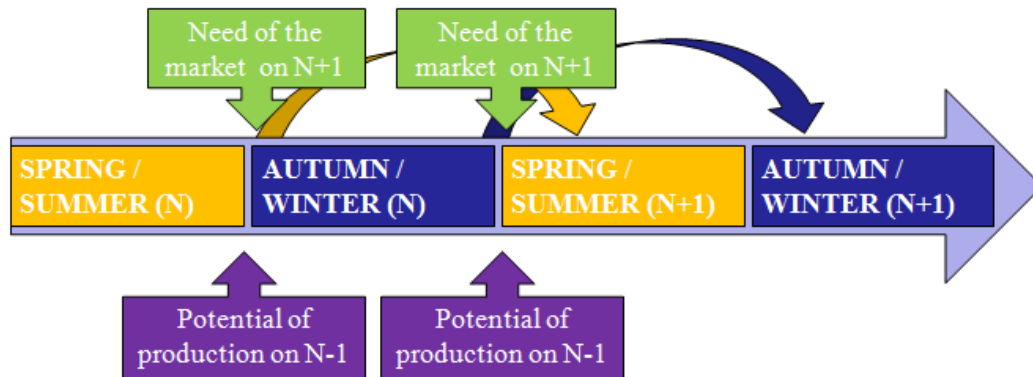


Figure 3: Scheme of production planning

Information flow about production needs

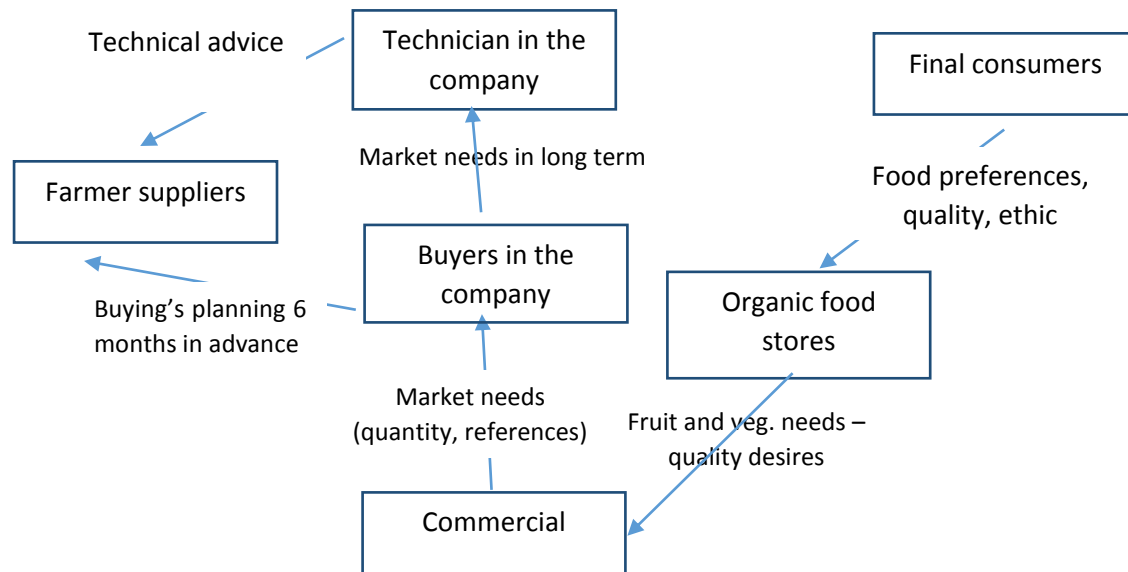


Figure 4: Scheme of information flow

The diagram shows a good information flow that connects people on the two ends of the chain. This is essential to try to please both of them. It creates also a common understanding of every one constraint that diminishes the frustrations that can appear (GAVIRNENI et al., 1999).

The communication is through ERP (Enterprise resource planning) where all the information is gathered on the computer network and available for the operators of the company. Meetings are also planned regularly to talk about production difficulties for farmers and specific client's demands of the different products. It gives a space for shortening the two extremity of the chain. But we can see that the information is always passing through Pronatura Company which is controlling it. The two extremity of the chain never meet directly and it has consequences on the transparency.

Transparency

Direct selling is really "putting a face" on food which means that they identify where it comes from, who produced it and how. This is what is changing the way people are consuming. Here farmers and consumers don't take part to the meetings and don't have direct access to the information of the company. Thus the chain is shortened through the people in the company in contact with the stakeholders but producers and end users never meet directly.

This is a real limit for transparency because the company is always controlling the information. This is influencing power balance because information is concentrated on the hand of the company. In practice, it is difficult to share all the information because the producers and clients could directly have commercial relations, avoiding Pronatura. It would be a important problem for the company which organised the whole food chain and invested in technical

support with the producers and with the clients. A higher share of information needs a high trust and loyalty among all the stakeholders.

Taking decision which are satisfying all the stakeholders

On the example of Pronatura, the people at the head of the company are the only ones taking part in the decisions. Even if they represent all the fields of the company (supply, business, logistic, finances and marketing) this situation is not satisfactory. In fact, one of the biggest problems of big food corporation is the little number of people making decisions and the centralisation of the control (HENDRICKSON and HEFFERNAN, 2002). The CSR practices, Corporate Social Responsibility, include several stakeholders of the food chain in decision making. It can start by including more employees to define the values of the company and the orientations to take. CSR researchers to go even further recommend to include other parts of the society in order to take decisions pleasing most of the people impacted. Through this way, farmers, consumers, NGOs would take part of the decisions to make sure that the company answers its social responsibility. It has been shown that the food companies gain immediate awareness thanks to this process (MALONI & BROWN, 2006).

Trust

The satisfaction study shows a certain trust because of the habit of working together and the respect of the production contracts. The trust with farmers often needs time, as it has been said on the interviews, but requires above all keeping the commitments established. In the company each buyer is responsible of several products and is in contact directly with his suppliers. By a close relationship between both of them, a yearly direct meeting if possible, trust is maintained. Having different platforms building a net in the country helps this feeling of proximity among the stakeholders.

The study of satisfaction from the producers shows good results globally. They are satisfied with the relationship they have with the employees of the company (90% of satisfaction), satisfied of the long term follow up (86%), of the production planning (78%) and the prices proposed (83% of satisfaction). However, when we look closer to the results we see that the highest satisfaction for all the criteria comes from the main platform that is the origin of the company and its head. The producers are still very close with the employees; they see and know each other because the company grew up with the producers. The employees helping technically the farmers are also based there. Whereas the worst results in satisfaction are found in Paris platform. There, the relation of proximity is eroded because people lose the contact with countryside and agriculture. Moreover, the platform has been created later and none of the people working in Paris have been part of the origin of the company and the beginning of organic agriculture. Organic fruit and vegetables lose of their meaning in the middle of towers.

Concerning the customers, they also trust the company because of the professionalism in products availability and respect of time deliveries. The fact that each shop has a salesman attributed with who he can communicate when it is needed is also an important factor to build trust.

Thanks to production planning and the respect of commitments but also thanks to certain proximity with the producers, trust is built with the suppliers. The same factor of proximity is working with the customers as well as the professionalism of the company about fruit and vegetables.

Power balance

A producer survey shows that the majority of farmers (34%) sell less than 10% of their production to Pronatura and have a direct selling channel. This is a real power for farmers because their salary is not in the hands of one company only but they are able to sell to different clients and access to final consumers. The big advantage of a company is its capacity of reducing distance and time to reach hearts of consumption (HENDRICKSON and HEFFERNAN, 2002) when farmers don't have the same logistic and investment means and are completely dependent on companies. Even if the producers are selling a little part directly the fact that they still have a system able to access a multiplicity of people buying their products gives them the choice to reduce or stop selling to the company in case of disagreements.

However still 18% of the producers are selling more than 80% of their products to Pronatura. This is a real threat for social sustainability because the company can have a high pressure on the producers almost completely dependent on Pronatura.

From few years, companies buying fruit and vegetables directly to producers are legally obliged to make contracts with them (LMAP³ law, 2011). These contracts define the quantity which will be bought, the quality and the minimum price for each product planned to be bought. It also defines means of transportation and delays. These official contracts are empowering the producers who can't anymore be victims of client pressure when the products are already harvested.

The first tools to make an equilibrium between the retailer and its suppliers is the multiplicity of the choices for the producers to sell their products. The production planning and the legal contracts give the possibility for the farmer to build the different channels for sales in advance with a security. Having a direct selling channel means that some of the revenue are based on hundreds of independent units which makes it even more stable

On the side of the shops Pronatura speaks about 10 retailers existing on the national market without counting the numerous regional retailers in high expansion. Because they have the choice between many different retailers on the market where they can start to buy from one day to another, they don't have a dependency on one supplier.

Empowering producers through their union

Pronatura is also working with associations of producers, cooperatives and producers' organisation which are three different statuses. When farmers are really involved in the system

³ Loi de Modernisation Agricole et de la Pêche : Law of agriculture and fishery modernisation

and respect their engagements of selling their products only through the organisation, they can really partake on setting up prices. They are discussing contracts conditions with different retailers and gain importance in the market, strengthened by the union of their volumes. It is also a way to exchange with other producers to improve practices and to spread farming innovations. For retailers it is also an opportunity to access big quantities of products coming from small-scale farming. The difficulty is the construction of a collective thinking among the group. Fruit and vegetables producers are often quite individualistic because of historical reasons. For one association in particular Pronatura is working with, it is difficult to keep it alive and the company has to take part of the organisation management. A union of producers has to come from the producers themselves but is difficult to maintain if it is the initiative of other stakeholders.

Feedback of farmers to consumers

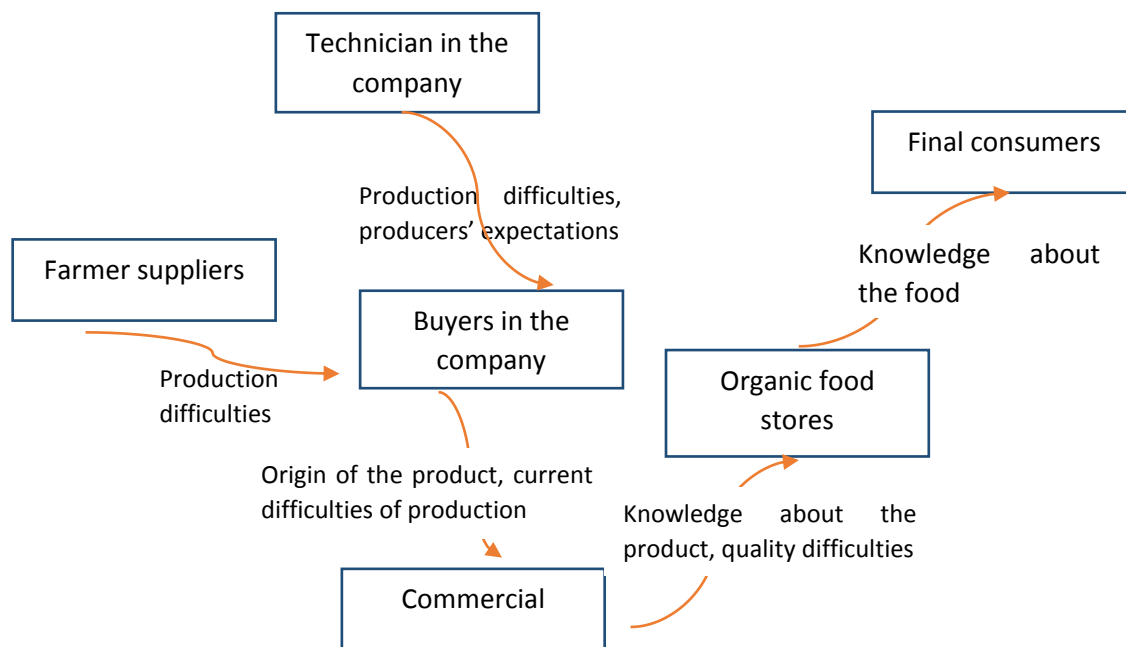


Figure 5: Scheme of feedback from the farmers to consumers

The company is trying to develop communication through documentation, flyers, and newsletters but also directly with the commercials in contact with them. They try to keep final distributors aware of the difficulties of farmers in the production because of climate or pests for example. They also teach them the seasonality of each product to respect natural cycles and to give priority to national products.

It is difficult to analyse the impact of it and the receptiveness of the final distributors. In the satisfaction survey they are satisfied by the documentation but commercials don't say that they are particularly receptive. For a true feedback it seems that real meetings are needed. The problem is the lack of time for both of them: farmers are often really busy and food stores

employees have other priorities. However, connections and feedbacks should be a real priority in the company because it constitutes an open door for innovations (HENDRICKSON and HEFFERNAN, 2002). It is through a mutual understanding and discussions between all the links of the chain that food chain's innovations will emerge to progress towards a general better satisfaction.

Different tools exposed for a real social sustainability

The information flow, the feedbacks and the transparency in the whole chain has been observed but only through the company controlling them. A better solution would be to create spaces and moments where the different links of the chain can all directly meet. However, the proximity of the company with its suppliers and clients impacts on a favourable way these sustainable components. This proximity comes from the decentralised model of the company (different little platforms distributed in the country) and the particular relationship between the farmer and his buyer in the company and between the salesman and his client. Still to satisfy producers their interlocutors have to understand their reality and difficulties. This is something difficult to make it real in an urbanised setting where farmers and buyers don't meet anymore. Thus, in food chain should be privileged a management of food products close to the source of the production to gain in satisfaction. If only Pronatura employees are creating links and comprehension between farming fields and stands, these ones have to be really aware of farming reality as well as selling constraints.

Production planning is a really important tool to create a power balance for farmers often disadvantaged on regular food chains. It is also strengthening the trust for all the stakeholders because the production is managed in adequacy with the needs. Trust is also the result of the professionalism of the people organising the food chain. Professionalism is defined by the meeting of their engagement with producers and clients but also their relevant knowledge about farming and sales reality. The percentage of the production sold to the company should be regulated to gain in power balance for farmers. This factor of sustainability is also encouraged by the union of the producers as the example of Pronatura shows. Farmer's groups, by joining their volumes of production have a real impact on the market and in front of retailers interested by their products.

The share of decision making is also important in social sustainability but not well managed at Pronatura. It should be tried to multiply the people involved to engage different points of views and sensibilities. Decision makers should represent a larger part of society, in particular all the stakeholders involved in the food chain. It is through this process that companies will improve their social responsibility of fitting the society in general.

c. Environmental sustainability

Studying the environmental sustainability can be really complex if all the fields of the company are analysed (transports, buildings, wastes...). We choose to focus on the sustainability of the farming models the company is working with. In fact, in food chains the biggest greenhouse gas emissions take place at the agricultural stage (GARNETT, 2011).

The environment sustainability of small-scale farming compared with industrialised systems can be defended on several points (ROSSET, 1999), (ALTIERI, 1998). Often associated with multiple cropping-systems, it brings more diversity to the agroecosystem which is the base for hosting vegetal and animal biodiversity. Then it tends to make a better management of the local resources, importing less input from the outside. Therefore, a sustainable food chain should prefer small scale farming and diversified cropping. Here is studied the type of producers Pronatura is working with.

Vegetable producers in Pronatura have on average 12ha outdoor. This number is quite high when we know that on average organic vegetable producers have 5ha (AGENCE BIO, 2014). However, 47% of the producers have less than 5ha whereas only 11% have more than 30ha. It shows that the majority are still small scale vegetable producers but the company work also with big scale farmers. On average they grow 7 different species of vegetables and 30% of the producers don't have more than 3 different products. Only 15% are diversified producers with more than 15 species. There is a real lack of diversity in the production of farmers.

Concerning the greenhouses, they have on average 1ha covered which means that the majority is not specialised and limit the impact of plastic in their agro-system. But still 17% have more than 3ha.

The fruit producers cultivate on average 12ha. 33% have less than 5ha which is a small scale fruit production and only 4% have more than 30ha. On average they have 3 different fruit productions but 37% are doing a monoculture.

Finally, concerning the controversial practices in organic agriculture, 11% are feeding plants through irrigation, 5% are heating greenhouses and 2% are doing soil disinfection by steam.

The sustainability of their energy consumption is not well known but the study made shows that 9% are using renewable energy.

The environment sustainability of the producers is really variable because the company is working with a large range of farming systems. In fact, some are small scale farmers having diversified cropping system but others are cultivating a lot of land specialised in few crops, using sometimes harmful methods for environment and dedicating an extended surface of the land for greenhouses.

The company explains that big products on the market like carrots, potatoes and leaks have really competitive prices on the market and producers have to be heavily mechanised to make these crops profitable. Pronatura is mainly working with specialised farmers for these ones. But for products more specific like fennel, radish, spinach or parsnip, prices on the market are still remunerative for small scale farmers. Pronatura's employees are saying that they give priority to small-scale farmers who often correspond to the historic producers of the company.

Working with small scale and diversified farmers is more sustainable in regard to the agroecosystem. However, working with small-scale farming brings other problematic. The heterogeneity of suppliers brings higher costs and can be more difficult to organize. Distributors and importers generally prefer to deal with few suppliers to reduce cost and complexity (VOGEL

et al, 2007). Thus, big scale farming systems are advantaged. But it is also more dangerous for the continuity and stability of the supplies. Nowadays, it is certainly the coexistence of the two different approaches of the production that allows the company to show certain environment sustainability while being competitive on national and international organic market.

V. The end of the model of “little diverse organic producers and independent loyal food stores”?

Pronatura is the witness of a change in organic food stores. At the beginning of organic agriculture, organic shops were mainly independent structures convinced by the relevance of organic consumption and production. Their work was an activist action at this time. On the other side of the chain, only few producers were proposing fruit and vegetables and always in little quantities for niche markets, calling into question the industrial farming model. Today organic store models are changing and retailers have to adapt to it. On the interviews, organic food stores expressed their desire for quality and ethic but in reality they tend today to imitate conventional distribution. The organic food stores which are growing today are large chains which are managing their supply mainly by looking at the different prices of the retailer companies. Organic market is not anymore a niche market and economic considerations are leading choices.

On the other side appear large organic producers offering big quantities of fruit and vegetables, sometimes quickly perishable. Therefore, they have to get rid of the products rapidly even if the prices offered are not so remunerative. Doing so, they influence all the other producers on the market who have to adapt to these new prices. It is the law of supply and demand.

In this context it is hard for Pronatura to justify different prices based on fair-trade with small-scale producers. We observe that a retailer is part of a whole system and has little power to change market laws. Final consumers have to require a change in the market system to make organic food chains different from the conventional model based on economic considerations only. As far as we will be part of a market structured by price competition and people will be disconnected from farmers, things will not change (GOODMAN, 2002).

CONCLUSION

The sustainability analysis of the food chain highlights the opposition between environment, social components of sustainability and economic constraints. In fact, the economy is linked to a globalised system based on supply and demand law. In this context companies looking for a real trust, power balance, a minimum security of revenue for its suppliers and working with high environment benefits farms has to communicate heavily with their clients. They need to justify a different way of management from a market-based one and have higher costs because of a higher complexity. Pronatura is an example of retailer who is trying to connect sustainability and globalised market. A tool to do so on the way they are

organised is space proximity. Different platforms are established to be closer with suppliers and clients. But it is above all the employees of the company who are the guardians of sustainability through their professionalism. They are able to understand the constraints of their partners and maintain with them close and individual relationships. Meeting the supplier needs is often left aside in conventional large food chains. The study has shown that solutions exist to gain in security and power balance for farmers such as production planning, the establishment of production contracts and their union inside organisations to be able to sell together. To manage to work with all kinds of farmers of which small scale diversified farming systems, the supply management including technician to help farmers and production planning is useful.

It has to be admitted that the company is not putting effort on sustainability only because they have values but their social and environmental considerations condition their good image and good reputation.

This example of organic company gives useful tools to have a meaningful economic activity for all the stakeholders involved. Nevertheless, it could go further on several points in particular in regard to transparency, stakeholder connections and decision making. Discussion forum could be created where all the stakeholders could meet directly and not only share through the intermediary of the retailer. Alternative decision processes can be implemented giving the opportunity to all the stakeholders of the food chain to be decision maker. Concerning price stability for farmers, their action of adapting their margin in function of the positive or negative market context seems to be the best they can do in a globalised market.

The selection of the farmers is the basis to orientate the food chain in a particular direction. In this case selecting sustainable farming models meeting the expectations of the other stakeholders is particularly relevant. The experience of the subsidiary firm implementation in Spain confirms that theoretical methodologies for building a food chain are not always adapted. It needs an understanding of the different needs of the other links of the chain as well as the identification of the farming elements determining sustainability. This synthesis is building the criteria to compare and select future suppliers.

The study shows some limits. In fact, other food chains should be analysed in order to bring other point of views and inputs and give a more complete vision on the question. The study of sustainability on each field of the company could be more developed but a lack of material from the company and time constraints for data collection have limited the conclusions. Nevertheless, this research based on a real experience with an important company in the organic market, is a first step on guiding the management of food companies looking for sustainability. The need for innovations within the food chains to go towards sustainability is obvious. On one side consumers are asking for change to be able to identify healthy and ethical food and on the other side farmers are not always satisfied of their conditions within the chain. We remark here that this research can be extended further than organic market field because our conclusions could fit other quality food chains looking for sustainability.

Further researches have to be made in this field in order to propose multiple different concrete tools for actual and future food companies looking for improvement in stakeholders' satisfaction and sustainability.

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APPENDIX

Appendix 1: Interview grid developed during the field work in Spain to describe farming system (in Spanish)

		ESP - Informaciones producción para primera visita					
Nombre :		Productor individual	<input type="checkbox"/>	Otro	<input type="checkbox"/>		
Persona encontrada :		Empresa	<input type="checkbox"/>				
Dirección :		Cooperativa	<input type="checkbox"/>				
Numero de teléfono :		Organización de productor	<input type="checkbox"/>				
Informaciones tipo de producción							
Fecha :		Auditor :					
A	Informaciones generales			COMENTARIOS			
	Producciones en la finca (rodear)	Frutas	Hortalizas	Animales			
	Numero de hectáreas						
	Numero de año en bio						
	Totalidad de la producción en bio						
	Grado de diversidad de producción <small>(0=1 variedad-1 especie, 1=1 esp-dif var, 2=dif var y esp, 3=dif producciones)</small>						
	Region de producción						
	Tipo de zona (marginale, productiva, de AOP)						
	Empresa familiar/orientada hacia exportación/ mercado nacional/ local...						
	Equipado (0=casi todo el trabajo a mano-3=casi todo mecanizado)						
	Numero de personas trabajando en la finca						
B	Producciones en detalle						
	Producto	Numero de piezas	Volumen (t)	Num ha	Conversion-bio-demeter-golabalGap	Periodo del año cosechado	

C								
Calidad producto/ sistema de produccion								
Capacidad de estabilidad en frigo/transporte								
Qualidad gustativa (0=qualidad baja, 3=producto excepcional)								
Razones de certificación orgánica (ideologica, salud, economica)								
Gestión sanitario y fertilización (lucha biológica/dependiente en insumos...)								
Tamaño maxi de las parcelas (ha)								
Variedades (intensivas, tradicionales, antiguadas, calidad alta, no CMS)								
Presencia infraestructuras agroecológicas								
Presencia de producciones convencionales alrededor - riesgo								
D		Almacenamiento-			Comentarios			
Condi campo /estacion								
Certificacion IFS								
Frigo de almacen								
Tabla de condicionamiento								
Condicionamiento hecho								
E		Sistema de venta						
		Venta directa	GMS nacio	tienda nacio	distrib nacio	GMS export	tienda export	distrib export
% del volumen de negocios								
Comentarios								
F		Potenciales futuros			Comentarios			
Satisfecho por su sistema actual de venta								
Interés por trabajar con mayoristas								
Interés por planificar con pronatura								
Interés por producir nuevas producciones o variedades								
Interés por trabajar en confianza sobre un precio estable al ano								
Planos futuros								
G		Logistica			Comentarios			
Tiene material para transportar los productos								
El transporte es refrigerado								
(Para los productores de la region de Madrid) Trayecto a mercamadrid frecuente								
Comentarios del auditor:								



Norwegian University
of Life Sciences

Postboks 5003
NO-1432 Ås, Norway
+47 67 23 00 00
www.nmbu.no