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Cultural factors influencing farmers' perceptions of agriculture and biodiversity: case study of a rural area in South-East France

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Abstract

This study tries to understand farmers' perceptions of agriculture and biodiversity, what cultural factors could be influencing them, and the resulting farming practices. A case study was carried out in a rural area, in parallel with the implementation of a Natura 2000 project. The study area showed a great diversity of farmers, farming systems, perceptions and behaviors. After the literature review and interviews with local farmers, data was collected and analyzed regarding farmers and their farming systems. A few cultural factors are identified to establish a typology. These were mainly linked to farmers' origin, experience in life and education. Linking farmers' profiles to their perceptions of agriculture and biodiversity was as a difficult process. It revealed the complexity of influences shaping an individual's world view and corresponding behavior. The methodology was questioned and recommendations were given in order to expand the study and enrich the results. Rather than statistical and quantitative research, the study explores diversity between farmers, in a local context.

Key-words

Perception, biodiversity, agriculture, sociocultural, diversity

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1. INTRODUCTION

Public interest in biodiversity is rising. Lack of biodiversity is now seen as a major challenge for our global society. Biodiversity is defined as the variation of life at all levels of biological organization: genetic diversity, species diversity and ecosystem diversity. The importance of biodiversity for the multiple ecosystem services it provides has been proven and its reduction is a global threat (Le Roux et al. 2008). Biodiversity erosion is mainly due to human activity, particularly through destruction of habitats, pollution, overuse of resources, urbanization (Millennium Ecosystem Assessment, 2005). Nature conservation requires appropriate management of protected areas, through in-situ conservation implemented by every stakeholder, of whom farmers are very important.

It has been acknowledged that agriculture and biodiversity depend upon each other (Le Roux et al. 2008). Agriculture can either support biodiversity or threaten it, depending on farming systems and practices. Even so, ecosystem services are vital for every farming system. Farming intensification is harmful to the environment: overflow of chemical fertilizers pollute waters, pesticides kill non-target organisms that might be important to communities, soil is lost, and natural resources are depleted (Robertson et al. 2014). Environmental problems as well as human health problems have led to a global concern within civil society for more sustainable agricultural practices. Expectations for agriculture go beyond the productive function, there is a social demand for multifunctionality within farming systems (Landais 1996 in Guillaumin et al. 1999; Guillaumin et al. 2008). Services provided by farms could potentially increase biodiversity preservation through environmental-friendly practices that might provide clean and regulated water supply, natural habitats for conservation and climate stabilization (Robertson et al. 2014). From protecting and renewing natural resources to maintaining open landscape or creating jobs, farming's multiple roles could help meeting goals of sustainability by integrating environmental and social functions to its pre-existing productive function (Guillaumin et al. 2008). The evolution of farming activities has made it a support for criticisms and hopes for the future and the environment (Lettre Nature Humaine 2012).

Agriculture multifunctionality has been promoted in Europe mainly through agri-environmental measures supporting environmental friendly farming on voluntary basis (Schmitzberger et al. 2005). These programs have shown great potential in some cases, however we still observe overexploitation of good land and abandonment of marginalized land and mountainous areas. Bringing policies into practices is not easy, many environmental programs are not attractive to

farmers or fail to achieve their objectives (Kleijn and Sutherland 2003 in Herzon et al. 2007). Conservation activities might not be well received by farmers who are not willing to change their system. Whatever means are used to promote a change, farmers need to decide for themselves what should be done (Cattan et al. 1992). The social and political constructs surrounding the situation are of major importance in the acceptance of any program. People might resist the protection of an endangered species, not because they do not value it, but because of the way the situation has been structured (Clayton, 2005).

Changes in economic, social, human and technical farming environments have had consequences on the definition of farmers' activities. The intensive model developed to the detriment of small-scale familial farming leaves little space for farmers' opinion and participation. This model makes farmers more dependent on subsidies, more individualistic, and subject of strong social pressure. Criticisms from civil society, disconnection with urban dwellers, together with new demands and constraints bring even more challenges to the farmers, leading to an identity crisis for this profession. Relationships are shaken up, and this crisis is exacerbated by the lack of collective farming projects and social recognition. Such weakening of farming systems could leave room for other models to emerge. The development of new models with high diversity of production within systems is appearing, offering various opportunities to farmers (Dockes et al. 2007). Dockes et al. found that farmers' world is extremely differentiated, in regards to production systems, and particularly as regards to the perceptions and frames of references (Degrange 2004 in Dockes et al. 2007).

Agricultural evolution and challenges must not be forgotten when looking at farmers' attitudes. Agro-environmental schemes have the potential to revitalize agriculture and reward its multiple actions within territories. A participatory approach needs to be developed and adapted to answer the expectations of both farmers and society. People's understanding and expectations in regards to natural resources are linked to their different views of nature. Such differences may, in turn, create conflicts between groups: environmental workers, landowners and farmers (Peterson 1995 in Hull 2001). Communication between the various stakeholders on the territory is essential in order to fully consider expectations, interest and diversity, and to encourage a participatory approach for adapted action planning (Guillaumin 2008; Fischer et al. 2007).

Values and attitudes towards environment have an influence on farm management and farmers' willingness to participate in environmental plans (Herzon et al. 2007). Farmers' involvement in biodiversity-related programs has been studied from different perspectives and revealed multiple factors shaping attitudes: technical, economical, psychological and social. Attitudinal factors as

well as structural factors are seen as important influences in farmers' choices (Camboni et al. 1993 and Gasson et al. 1988 in Herzon et al. 2007). In their study, Cattani et al. (1992) insisted on the importance of two factors to bring about change toward sustainable farming practices: technical-economical conditions as well as psychological and social factors. The latest have been developed by Clayton (2005) who presents conservation psychology as a useful tool to understanding people's behavior within natural environment, and to promote environmentally sustainable practices. In their study about public understanding of nature, Hull et al. (2001) tried to understand social construct of nature to further improve public dialogue on this subject. In their literature review, they present the work of Greider and Garkovich (1994), explaining that people define themselves through symbolic environments, such as landscapes. The diversity of cultures, values, beliefs and purposes for people is then reflected in their various definitions of nature. This idea is further developed by Fischer and Young (2007), regarding mental constructs of biodiversity. This study tried to understand the lack of public acceptance for biodiversity management in order to develop more sustainable approaches to biodiversity conservation. Perceptions of nature, agriculture and biodiversity appear to be a complex notion rather than an isolated, fixed concept (Buijs et al. 2008; Mills et al. 2013). Individuals and groups link biodiversity to various meanings defined as 'social representations', or what is called here 'perceptions'.

Most studies highlighted the fact that both attitudinal and structural factors are an important influence to farmers' choices (Mills et al. 2013; Schmitzberger et al. 2005). However, as observed by Herzon et al. (2007), further research should be done including qualitative assessment of social and cultural backgrounds. Cultural aspect as a distinct factor has not been so well developed in research and is of major importance to develop programs that are adapted locally. To get a better understanding of the factors that shape different attitudes it appears essential to integrate farmers' social and cultural backgrounds and their links to perceptions and practices. Looking at socio-cultural aspects of farmers' systems could help clarifying the reasons behind their actions. It will also help to develop adapted environmental measures using a participatory approach that could be more widely accepted and integrated by farmers than top-down policies. To insure long term changes in farmers' behavior farmers' mindset must change first, this requires integrating their values and motives for environmental management into agro-environmental schemes (Mills et al. 2013).

Based on previous studies, the hypothesis is that cultural factors have a role to play in farmers' perceptions and behaviors, and that these factors are closely related to local context.

The overall aim of this research was to explore farmers' perceptions, practices and relations to agriculture and biodiversity based on cultural factors.

The specific research question is:

What cultural factors influence farmers' perceptions of agriculture and biodiversity, and resulting practices?

This research question is asked with the hope to bring knowledge and tools for future research that might be done on dynamics of farming in local territories in order to stop the decline of agriculture, reassert the value of farming activities, reinforce agriculture-biodiversity dynamics and allow a sustainable development in difficult areas. Understanding the factors behind farmers' perceptions and practices might help to promote the sustainable development of agriculture in rural areas.

2. METHODS

This study was carried out in parallel with the implementation of the ecological network Natura 2000 in the Eyrieux valley (appendix I). Working on a case study helped to bring research question into reality, searching for concrete answers within a local context. The methodology was based on a literature review and semi-structured interviews with local farmers, using a participatory on-farm approach. The study looks closely at various factors (farmers' origins, experiences, education, farming systems) and their potential relations to farmers' perceptions and practices.

2.1. Study area

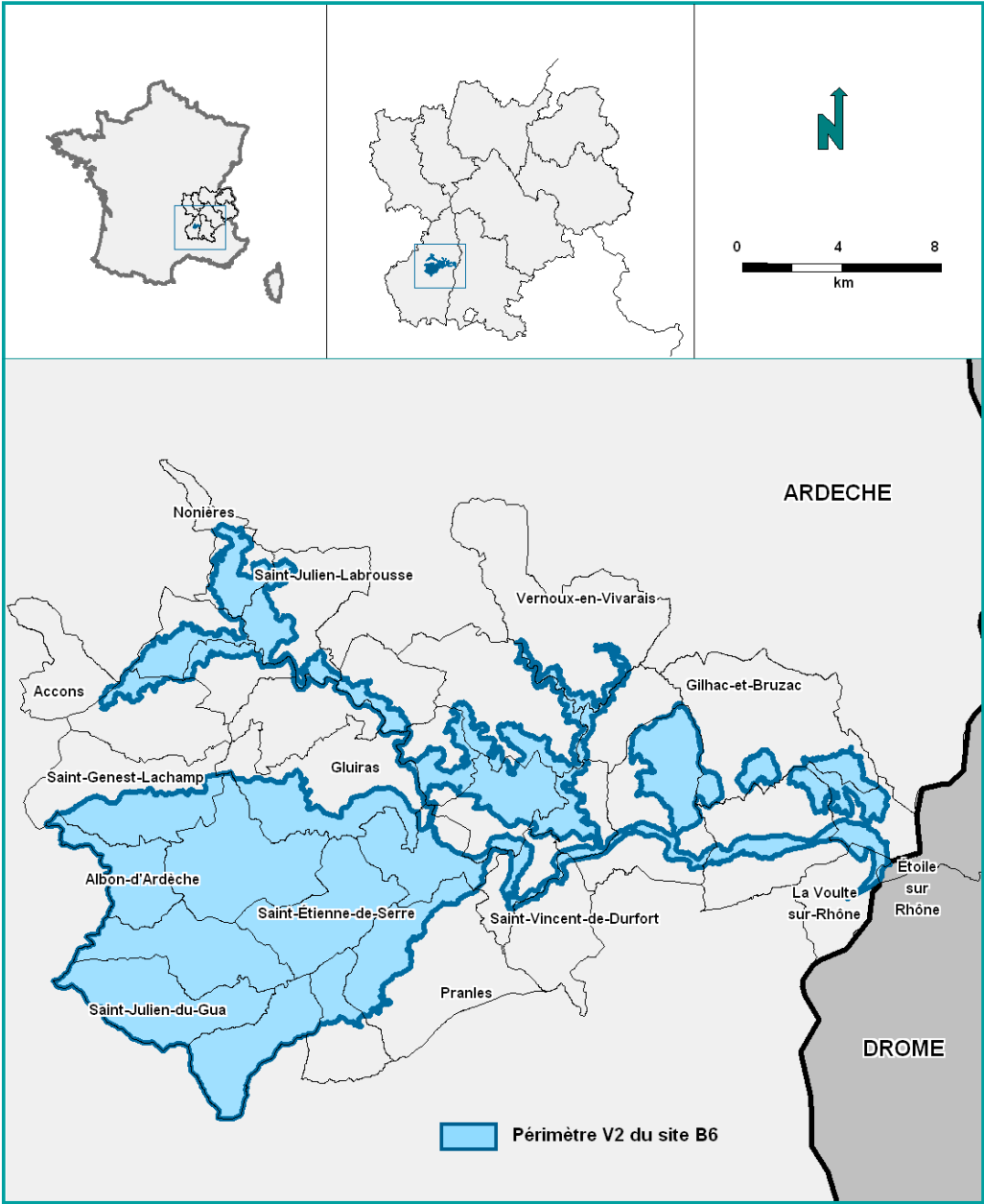


Figure 1 : Map of the study area (Source: Naturalia)

In order to answer the research question, a case study was carried out in the Vallée de l'Eyrieux, a valley situated in Ardèche, south east France (Figure 1). The catchment basin there is marked by its water geography, joining the mountains from Massif Central to the Rhône valley. Most of the area has a low productivity due to natural agronomical constraints: climate, geology, hills. Adapted farming systems have been developed presenting a diversity of high-value products, specific to the landscapes (terraces, canals, chestnut groves, orchards, meadows), and extensive production. The area is characterized by three main agroecological zones:

- The high plateau with cows and/or sheep livestock systems and grasslands
- The slopes with farming systems based on chestnut production associated with sheep livestock and sometimes goats, market gardening and/or small-scale processing activities
- The low valley with arboriculture and market gardening

These three systems are the most commons but vary from farm to farm. In the area, a high diversity of farming systems, practices, processing and marketing was observed within the territory.

Diversity and adaptation allows for good resilience within farming systems and yet this area is marked by a decline in farming activities. Although it used to be the most important economic activity and has adapted to and shaped a variety of agricultural landscapes, there is an ongoing reduction in the number of people working in agriculture and ever increasing of farm sizes. This tendency reflects the evolution of the agricultural sector in European community: marginalized and mountainous regions are abandoned and favorable areas are intensified and exploited through large systems.

The high variety of landscapes in the Eyrieux valley has made it a biodiversity-rich area, which turned it into a protected area by the ecological network Natura 2000¹. At the time this study was carried out, the area was being studied by Naturalia, a naturalist company, in order to assess biodiversity issues locally. Working together with this structure allowed to get precise data and direct insight on the real situation. The main results concerning agriculture can be found in the following note and more details are presented in appendix II.

¹Natura 2000 is a European network of nature protection areas aimed to assure the long-term survival of Europe's most valuable and threatened species and habitats
(Source: http://ec.europa.eu/environment/nature/natura2000/index_en.htm)

Data from the naturalist inventory carried out by Naturalia on the Eyrieux valley Natura 2000 site – relations between agriculture and biodiversity

- Only 38% of the landscape is open : 30% of grasslands (maintained by livestock), 8% cultivated
- Local agriculture = landscape diversity = habitats heterogeneity = biodiversity richness
- Many species registered in the European Natura 2000 list : 25 species of bats, 4 species of mammals, 7 species of insects, 5 species of reptiles, 6 species of amphibians, 4 species of fish and 1 of crustaceans, 12 species of birds
- Major importance of human activities to maintain a habitat mosaic
- Various habitats related to agriculture, identified as endangered, and offering ecosystem services:
 - Meadows, grasslands – hydrological functions, ecological, economic and social value, beneficial insects
 - Arboriculture – local identity (chestnut trees), long term ecological value, short term economic value
 - Cultivated areas – conservation of local assets (landscape), habitats heterogeneity, food production, economic value

(This data was used to introduce some challenges during a public meeting with local community. They do not present the whole situation but give an idea of the state of biodiversity at the time of this study).

The rich biodiversity of the area is related to many farming activities: maintenance of open landscapes and diversity of habitats create biodiversity hot-spots within agriculture landscapes. Land abandonment has a direct impact on landscape and biodiversity, when farmers leave, open spaces turn into fallow land which decrease biodiversity (Agreil et al. 2004). This landscape closure is related to structural changes in agriculture, and appears as the main issue in the study area. Maintaining agriculture locally, especially environmental-friendly systems, is vital to maintain open landscapes, habitats heterogeneity, and biodiversity.

This area appeared to be of interest for this study given the diversity and challenges concerning farming systems and biodiversity. It was also chosen as a result of an offer to work on a parallel project to implement the Natura 2000 network locally. This proposition seemed to be a good opportunity to develop the research through a local participatory program. The study took place at the Eyrieux river syndicate during a 6 months work experience. This internship was aimed to maintain biodiversity through action plans developed with farmers, and adapted to local

agriculture. Globally, the same methodology was used for both projects – research and internship. Differences came out in the results, answering different questions and expectations. More details about Natura 2000 and internship can be found in appendix I.

2.2. A local review

An annotated bibliography was developed in order to understand local context, history and evolution of farming. It was done at the beginning of the internship to get some basic information for the rest of the study. In parallel, meetings were organized with local stakeholders working with agriculture and the environment, to exchange on that subject and get their point of view about local agriculture. This first approach helped the researcher get to know the local area and local stakeholders. It also helped increase understanding of cultural factors that could have shaped local farming throughout history.

2.3. A participatory research

Participatory approach appeared to be important tool to support small farmers, foster rural communities, and support sustainable rural development (Wezel et al. 2009). Its benefits include, a good definition of local issues and challenges, which can be used to develop adapted tools and solutions that will fit stakeholders' needs and preferences, thus increase their tendency to adopt the projects implemented (Van de Fliert et al. 2000). In this study, differences between and within farming systems were analyzed: practices, biodiversity, human diversity, cultural diversity. The study attempts to find a global understanding of agricultural dynamics, including social, agrarian and environmental influences shaping them, in order to implement something beyond environmental measures, a social movement to reconnect farmers, environmentalists and society.

Farmers' participation was essential to understand their perceptions and cultural influences in order to answer the research question. To include farmers in all steps of the process, from the early stage of reflection and observation to setting the objectives and developing action plans, an inquiry was carried out within local farming community.

2.4. Sampling – a diverse panel of farmers

The study area covers a wide territory with an important number of farmers. Given the six months time limit, meeting every farmer was not possible and it was decided to focus on a few representative town that capture the diversity and challenges of the region. This sampling appeared to be adapted locally as most towns in the area have a wide territory including the three main agroecological zones and thus diverse farming systems. Moreover, every farmer of within

the selected towns would be contacted, with no criteria or prejudice, in order to observe the local dynamics from different perspectives. The study area was divided in three zones corresponding to three geographical dynamics (upstream water, downstream water and tributaries water) and slight differences in main farming systems. Upstream water zone was characterized by a high density of terraces, mostly used for market gardening; downstream water showed an important arboriculture activity; and the area representing tributaries water was quite mountainous, with mostly livestock systems. If differences between these areas could be observed, there were also many similarities: similar farming systems and biodiversity issues (e.g. land abandonment).

For each zone one or two towns were then selected looking at biodiversity issues – highlighted by the inventory realized for the Natura 2000 project (appendix III) – and agricultural dynamics. In the end four towns were selected for their diversity, local dynamics and environmental richness. For each one, a complete list of farmers was established. Listing was done through data collected from local networks: the mayor, agricultural chamber, farmer organizations, and completed during interviews with farmers.

Every farmer was contacted by phone, the study was presented to them and interview was planned at their farm for those willing to take part of the inquiry. A total of 29 farmers on about 40 contacted were interviewed. Two farmers out of the selected towns were also interviewed at the beginning in order to test the interview guide. They were situated in the study area and were integrated into the results.

2.5. Semi-directive interviews

In the participatory approach, to apprehend farmers' perceptions of agriculture and biodiversity as well as cultural influences, semi-directive interviews were conducted. Interviews appeared to be the right tool to collect data from farmers and answer the research question. Semi-structured interviews give interviewees the possibility to express their point of view and develop ideas around broad open questions (Dockes et al. 2007). It was determined to be the most appropriate venue in order to gather information for qualitative research, creating the opportunity for interviewees to discuss topics that may have been dismissed and might be of importance to them. A qualitative approach also encouraged exploring phenomena rather than producing quantitative data (Fischer et al. 2007). The objective was also to get a certain amount of information on precise themes rather than a general discussion, therefore an interview guide with “semi-directive” questions was used.

The guide was prepared in advance, grouping questions by topics that farmers were willing to be approached about (appendix IV). Each topic had few broad questions to be asked first, and some detailed questions to be asked if not answered before or to revive the discussion. The interviews started with general information about the farmer himself, his history, career and a description of his farm. It then came to in-depth questions about perceptions and representations of agriculture at different scales, its past and future evolution (projects, challenges, opportunities...), its role and the way people perceive it, their idea of sustainable farming. Finally, it approached the notion of biodiversity. Perceptions of this and of the exchanges it can have with farming, including practices that could promote biodiversity and actions that could be implemented locally.

Interviews were not recorded but notes were taken in order to be more efficient with the data processing and to avoid discomfort for farmers. It was also a useful way to leave gaps for interviewees to reflect and eventually complete their answers while the interviewer was taking notes.

After each exchange, the ideas collected were organized into an analysis grid (appendix V), corresponding to the different subject broached. The first interviews helped to update this grid and adapt it to field experiences. Every points mentioned by the farmers interviewed were included on the grid and data that appeared relevant to the study were highlighted to make the analysis easier. These grids brought about a better overview of main ideas that could be used for the study.

2.6. Data analysis

The data analysis was done using interview grids. Farmers and their farming systems were looked at to establish a typology and compare it to their perceptions of agriculture and biodiversity.

In the results, no distinction was made between farms geographical situations, every farmer was brought together without any mention of the town or zone they are situated in. This approach is a choice of methodology that reflects personal observations made during this 6 months study. Zoning and sampling were used to cover the diversity of farming activities and get an overview of the territory, not as factors influencing the results. Indeed, if different areas are characterized by the strong presence of one activity, through the study the different farming systems are spread over different territories (appendix VI). In that sense, farm localization might have influenced farmers' choice of production but have no influence on their perceptions. This was noticed

during the study and can be observed in farmers' tables. Moreover, the focus of this study is on cultural factors and selected towns are situated in the same valley, which brings them together under similar dynamics.

The typology was developed including several factors from the farmers' profiles – age, origin (rural or non-rural), life experience – and their farming system – activity, production, and farming practices. One focus was cultural factors, looking at different potential influences and resulting perceptions that might influence farmers' behaviors. Typologies and results were established by a table that summed factors that were apparently important from the farmers' profile (cf. Farmers tables in appendix VI).

3. RESULTS

The first part of the results presents general data on farmers interviewed. A typology is then established and used to analyze their perceptions. I look at ideas developed by farmers about the theme “agriculture and biodiversity” and their potential relation to the different profiles.

3.1. General data

A majority of farmers contacted did accept to meet and be interviewed, but some did refuse, justifying themselves by a lack of time. They might have had other reasons but they did not tell them to me. No logic was observed for farmers refusing to be interviewed, they had heterogeneous profiles and farming systems, thus it does not appear as a result to be considered.

Interviewees are representative of the **diversity** of the area with farmers ranging from 19 to 70 years old – eleven under 40 years old, ten between 40 and 60 years old, and eight over 60 years old. These farmers do a **variety of activities**: chestnut production, dairy cow/goat/sheep farming, market gardening, fruit-growing, pig/cow/sheep meat production, wild plant picking, hydroponics and cereals. The farm size varied from 5000 m² to 250 ha with an average size of 70 m². Commercialized systems were also well-represented from direct sales to wholesalers. This diversity provides a good representation of local farming when compared to public data on agriculture from different towns situated in Eyrieux valley (data consulted in the General Agricultural Census). Details of every farmers met in the different towns are presented in appendix VI, and a global overview is presented in the following picture (Figure 2).

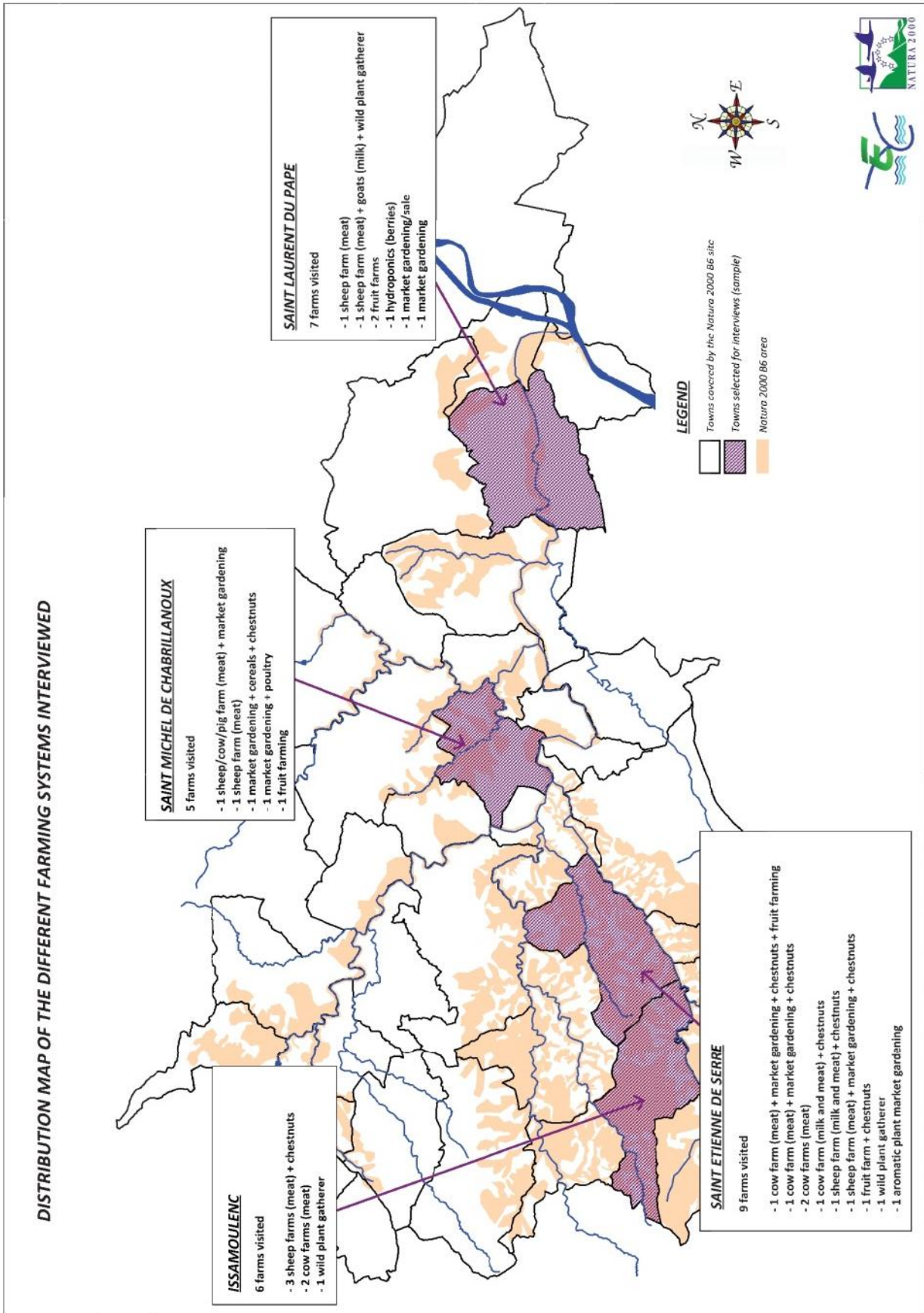


Figure 2: Distribution map of the different farming systems interviewed

Farming systems were quite heterogeneous as well:

- 12 farms are defined as **conventional**, including one high-input system (hydroponics)
- 10 farms are certified **organic**
- 3 farms are identified as **traditional small-scale** system
- 4 farms have a **low-input integrated** system, close to organic systems

Globally these different systems are well spread over the territory with production following agroecological zones; most farm combine different activities to create a more resilient system, adapted to local constraints. Many farmers have chestnut production as additional income, and sometimes they combine different productions such as goats and sheep or cows and vegetables. Fruit farmers usually focus on fruit and nut production and produce different fruits throughout the year: cherry, peach, apricot, apple, kiwi, and eventually chestnuts (more details in appendix VI).

Analogies between two farmers with similar activities may be expected, but **the important diversity of the territory makes each farm specific**. One sheep breeder might have no more in common than the sheep breeding activity with his colleague but he would share many views with a market gardener. These differences and similitude may appear when looking at the farming systems, conventional or organic, commercialization or farmers' origin, and might be reflected in their perceptions.

3.2. Typology

Defining a typology was quite complex, given the diversity of the farms and farmers met. The general data described previously are important factors to consider but they are not enough to build up a typology, in regards to the research question on cultural factors. Some findings from interviews were considered influential for the study. They are presented here and further used to build up the typology.

When asking farmers to talk about themselves and their **origin**, there is a distinction between “rural” people – from the area who have taken over familial farm, and the new comers or “neo”, either “non-local” – coming from another area, “non-rural” – not from a farmer family, or both. The term “rural” is used here to refer to people from farmers' family and “neo-rural”, or “neo”, to refer to others.

Neo-rural farmers have a different view on their activity and are usually more open-minded to alternative farming systems and innovations. They see farming as a life project, a vocation,

rather than a profession – *“Becoming a farmer was a life choice, I like being with animals, in nature, living with natural cycles”* (quotes from a farmer). They are more likely to question themselves and their practices and usually fit into an action learning process – learning while doing. A young farmer met during the study explained that he would not have developed so many projects, particularly a project growing cereals in this area, if he had been rural, knowing the risks he had taken. Being a newcomer he just thought that it might work and carried out his project without listening to old farmers’ warnings. He said that he got good results but his neighbors, rural farmers, would not believe that his “alternative” practices could work, even though they could see his success.

Of the 29 farmers met, nine of them were identified as neo of whom six practiced organic farming and three had integrated low-input systems.

The **rural people** appeared to be, in many cases, **following the familial scheme**, mostly conventional systems: of the 20 farmers identified as rural twelve were conventional farms. The five remaining use alternative systems, either organic, integrated or small-scale traditional farms. For the conventional, the actual modern system is an evolution of the familial farm over the years seen which was seen as progress that should be continued. The traditional farms do not show important changes and evolution over years.

It should be noted that what is here called a “conventional system” appears to be a low-input system if compared to other regions. The studied area does not allow high mechanization and intensification and if these conventional farmers could confirm using products they insist on the little quantities used – *“We have no choice here, it is a mountainous area, we cannot mechanize and farm everywhere, we have to leave some natural areas”* (quote from a farmer). The term “conventional” refers here to farming systems with higher productions compared to small-scale systems (quantities produced, herd size). These farms look for maximum yields, efficiency, and use modern machinery whenever possible.

Among the 20 farmers identified as rural, twelve are defined as conventional and eight are what is called “alternative systems”, either organic farming (4), traditional small-scale systems (3) or low-input integrated systems (1).

In regards to rural farmers with alternative systems, they may or may not present a split with the familial scheme. Two profiles were uncovered:

- **Small-scale systems** that had been developed by the farmer's predecessors with **traditional practices**. These systems have been taken over by farmers with no farming training; they learned everything with their parents on the farm and follow the traditional scheme – 3 farmers interviewed reflected this profile, all of them were over 50 years old.
- **Organic or integrated farming systems** carried out by rural farmers with out-of-the-farm experiences. These farmers have developed their own system and create a break between the familial scheme and their own initiatives. Five farmers interviewed could be classified under this profile: 3 of them had been travelling for a while and developed an organic farming system; one had been a sheep herder for 20 years and created an integrated farming system. One farmer who is from a rural origin took over the familial farm and managed it under a conventional scheme for years before changing over to organic. This farmer did not have any outside experiences and he did not explain his choice clearly.

When comparing neo-rural to rural farmers general points came out and farmers' origin seem to influence both perceptions and practices. It is important to note that each farmer has particular experiences and that other factors come into play. Farmers' origin and personal experiences appeared to be good criteria to establish a typology, in relation to different farming systems. Based on these criteria, six profiles were defined in which each farmer interviewed could be identified, they are presented here and summarized in table 1.

- Rural farmers with conventional system (12): farmers who have taken over the familial farm after following an agricultural training. They try to develop their system to become a highly productive system, following what they learned and what is supported by public policies – this one also include the one farmer who does hydroponics (high-input system). They represent the majority in the valley.
- Rural farmers with small-scale traditional system (3): farmers who have taken over the familial farm without any training. They learned on the farm and continue the traditional practices of their predecessors. There are usually small-scale systems managed by elderly farmers.
- Rural farmer with integrated system (1): only one farmer who has an agricultural training and had been working for 20 years as a shepherd before settling down as farmer. He has 180 sheep under transhumance during summer, and he watches his herd all year long. This category was made for this farmer in particular because he could not be classified in any other profile. His system was neither intensive nor organic production, he had a

rather traditional system but a large herd – it was not a small-scale system, and he was from a rural origin.

- Rural farmers with organic farming system (4): farmers who are from a rural origin and have changed their farming system to become organic or taken over a farm which was already organic.
- Neo farmers with organic farming system (6): farmers who are not from a farmer family. They made the choice of becoming a farmer and developed an organic farming system in agreement with their values.
- Neo farmers with integrated system (3): farmers who are not from a farmer family, they made the choice to become farmer. They developed an integrated low-input system that might be close to organic farming but is not certified. They have chosen not to be organic because of a lack of interest or a fear of constraints.

Table 1: Farmers' typologies

<u>NEO</u> New in farmers community 9 farmers	<u>RURAL</u> From a farmer family 20 farmers
Organic: majority of the production is certified	
6 farmers	4 farmers
Conventional: yield maximization, efficiency, modern machinery and use of chemicals	
	12 farmers
Integrated system: low-input system with practices similar to organic but no certification, might use machinery and chemicals	
3 farmers	1 farmer
Small-scale traditional system: system developed by farmers' predecessors with traditional farming practices and still under similar management, old farmers with no farming training	
	3 farmers

3.3. Farmers' characteristics

Different farming systems sometimes mean different farmers' profiles and expectations may cause a split between farmers and create misunderstanding and tensions. A rural farmer who has been living at the same place his whole life said he had good relationships with other local farmers until he settled on a small-scale organic farm. His neighbors have conventional systems with different practices, they did not understand his way of farming and it created tensions locally. Farmers from the same origin had different view points on agriculture and did not

understand each other. The farmer with a small-scale organic farm had been travelling a lot and worked out of farming, which helps to explain his different perception of agriculture.

Another young neo farmer recently settled talked about difficulties he had trying to integrate into the local farmers' community. He explained that he was neither from the area nor from a rural origin and that, moreover, he had developed an organic system which was not well perceived by local conventional farmers. This split appeared to be an additional difficulty to add on to his activity start-up and is a potential obstacle to new farm settlements.

- Membership to organization

During interviews, farmers were asked about their membership to organization related to agriculture. Most of them were taking part of one or two farmer organizations, usually for practical reasons: cooperative use of farming equipment, selling groups, farmer shop or labeling groups. **No relation appeared between the different typologies and farmers' engagement in organizations**, it seemed to be a personal choice. A link could be established though between their trade-union affiliation and their systems: farmers with similar profiles usually had similar affiliations.

- Education

Apart from three farmers who learned at the familial farm and followed their parents' traditional small-scale system, every farmer met had agricultural training. This training was taken either at high school, during higher education, or as adult training. The three farmers who did not have education followed the traditional system because it is the one they learned from their family. Education is supposed to develop farmers' knowledge about different systems and other practices, bringing them new insights and ideas about their activity. However, the education they have was very different depending on the time period in which they took their training. Farmers who were in school after the green revolution did not learn the same approach to farming as farmers nowadays. It is difficult to assess what education each farmer received but a distinction can be made between the ones who got an agricultural training – and might be more capable of developing new projects, change their practices or at least understand others – and the ones who only learned on their farm and are limited to what they have seen their predecessors doing. In that sense **education appears as a factor that fits the typology, regarding the rural farmers with small-scale traditional system**, and explains in part their approach and perception of agriculture.

- Life experience outside the farm

Regarding life experiences that may have strong cultural influences on farmers, farmers' careers out of the farm were analyzed. On this point, the focus is on rural farmers, as neo have, by definition, their own experience outside of rural life. Out of 20 rural farmers, seven had a specific career with past experiences outside agriculture such as working in another field (4) or travelling (3). From those with **different job experiences**, only one was identified as different from other rural farmers, he was the one with an integrated system who had been working as a shepherd for 20 years. The others were part of conventional or traditional systems. On the other side, the three farmers who had been **traveling** for a while showed a **different perception of agriculture**, developing organic systems within the local context out of their conventional farms. These young farmers who grew up in rural areas could have followed the conventional scheme and had a different profile than similar farmers who they grew up with.

Another question was asked to farmers in order for them to talk about themselves: **“why are you a farmer?”**. The interviewees answered differently but all expressed the idea of passion. Some have a vision for their job in its context *“being in nature with animals”*, *“good life in the countryside”*, and others like being independent and free. One farmer – who is rural traditional – said she felt good about *“taking care of a little piece of our planet”*.

On this question no differences were observed. Even if farmers perceive and practice their activity in different ways, they seem to share similar feelings and motivations for what they do.

Getting information about farmers and their farms helped better defining farmer profiles. It brought data that could be further used to analyze cultural influences shaping farmers' perceptions. It was a good introduction to farmers and their farm which created a better understanding of the local context and the perceptions developed. Several points were broached during the interviews with the first part focusing on agriculture and farmers' perceptions of it, and the second part focusing on biodiversity. The results are presented following the order they were asked.

3.4. Farmers' perceptions of agriculture

- Evolution of agriculture

When talking about evolution of (their farm, local agriculture, society), farmers have a common perception of the past, reflecting the local history of farming. Most of them agree on the past evolution of local agriculture: a decrease in farm number and an increasing size of the remaining farms – *“there used to be many more people with small herds. The flocks were maintaining the*

landscape; people were maintaining terraces... It's the end now, everybody has left" (quote from a farmer). This idea is shared by the majority who has been living in the area for a while and has seen this evolution. This idea is confirmed by the local history. It does not reflect different perceptions but a common reality. On the other hand, perceptions and expectations for the future differ, a pessimistic vision is shared by the majority (14 farmers), and an optimistic and dynamic perception of agricultural development is shared by few (2 farmers).

Every farmer met was **aware of the risks and threats faced by agriculture**, and expressed uncertainties about agriculture's future locally. These uncertainties were due to the numerous challenges and constraints met by farmers such as: dependency on European subsidies, restrictions, complexity of developing projects and initiatives, and little support from civil society. The local context reinforces these pessimistic perceptions, and farmers, facing the uncertain future of local systems, feel stuck in rural abandonment – *"farming future will depend on the evolution of European subsidies"*, *"evolution of local agricultural is on a bad path, in 10 years there will be missing ¾ of the farmers needed, old farmers have such big farms that it is impossible for people to take them over, land prices are very high, finally the tourists buy them and they are not used for farming anymore, there is too much money at stake"* (quotes from farmers).

It was found that **a majority of farmers had a pessimistic vision of the future**, farmers from different profile and of all ages, even young farmers who were just starting, did not think that agriculture would be sustainable in the future – *"I don't think that local farming can survive here"*(quote from a farmer). Thirteen of the fourteen farmers who had this pessimistic approach were from a rural origin – half of the conventional, half of the organic, all of the traditional and the one with an integrated system – and only one was a neo with an integrated system who was at the end of his career. It is not surprising to find mostly rural with a pessimistic approach, as they have seen the decrease of farming locally. On the other side, neo are new comers with hopes and beliefs for the future that brought them into this activity. However only two neo farmers expressed a real optimism for future, they were the younger neo and had developed a local farmer shop – *"There is a natural evolution toward more sustainable productions, productions that are better and healthier"* (quote from a farmer).

The promotion of quality products, local dynamics and direct-sales through small low-input and diversified farms appeared as a solution to compete with big mechanized and high output systems. Many farmers mentioned it, with no clear distinctions but a larger proportion of farmers who were already working with local initiatives and low-input systems. For the majority, though,

the actual local farming systems could not sustain themselves in front of industrialized regions if nothing was done to promote their quality and positive externalities.

At the farm scale, the perception of agricultural evolution is homogenous. It is expressed in various ways but little differences are seen between farmers. People under 40 years old usually have more personal projects than older farmers who foremost hope to maintain their activity: six of the fifteen farmers over 40 talked about personal projects, and ten of the fourteen under 40. Regarding their profiles, five of the twelve rural farmers had conventional system, half of the rural farmer had organic system (2), the one rural with integrated system, 2 out of 3 of the neo farmers with integrated system and all of the neo farmers with organic system (6). The initiatives developed take place at the farm level through personal projects or include the whole local territory through collective projects (e.g. farmers' market). Taking part in collective projects appears to be a very personal choice; some farmers mentioned the benefits of collective actions whereas others were willing to be independent, working on their own. Only one neo organic farmer talked about a collective project he was working on.

Regarding evolution of farming locally, farmers with an optimistic vision of future were found to be the neo with local dynamics and diversified small-scale system. It is difficult to draw conclusions as only two of them shared such optimism and many farmers had a balanced opinion or no opinion at all. However, it seems that farmers who were from a rural origin had a tendency to look at past agricultural evolution, the one they had seen, without expecting it to change, resulting in a pessimist vision of the future. In that case, neo would bring new insight and dynamism as they have not seen this and have a more objective approach to the future.

The ideas expressed when talking about agricultural evolution reflect the lack of regional programs answering local issues, and a need for programs supporting local projects, small-scale farming and local networks.

- Agriculture's roles

As expressed in the introduction, agriculture has many roles to play. Farmers are conscious of the importance of their activity and share a **common vision of agriculture's multiple functions** (Figure 3). **Differences appear when looking at the importance they attach to them.**

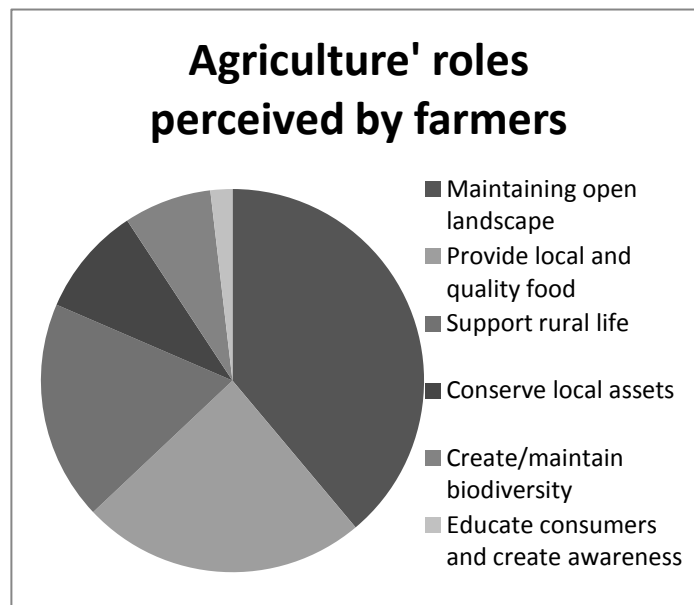


Figure 3: Diversity of farmers' perceptions of the different roles of their activity

Functions mentioned during the interviews are presented and analyzed here in what seemed to be their order of importance:

- Maintain open landscapes and biodiversity – *“Farming has a very important role to play in maintaining open landscapes, managing space and promoting biodiversity, farmers are the countryside’s gardeners”, “Without farming activity, the area would die, covered with bushes and forests, people do not realize the work done by farmers and their herds on the landscape and for biodiversity”* – presented as the main role of farming by thirteen farmers and secondary role by six, the different profiles were found in homogeneous proportions with farmers from every profile: eight rural of whom six have conventional farms, one with traditional and the one with integrated, and five neo both organic and integrated. This function is related to the study area which is quite hilly, and where uncultivated lands turn into wilderness. Sheep herding is the major activity, essential to maintain open landscape against bush invasion and create a mosaic of habitats. Most of the farmers for whom this function was important were shepherds (7). Biodiversity does not appear as a major role for many farmers but some of them talked about it as being a result of open landscape thus of farming activities. The importance given by many farmers to this function is related to local dynamics and landscape evolution. In the past, farming activities were much more important and the resulting landscapes were different, with more open landscape resulting in highly diverse habitats. This result brings every profile together to reflect a local reality rather than a personal perception.

- **Provide local and quality food**, feed people – *“We feed people locally, we produce local and quality food that respects the environment and is adapted to local conditions”, “The main function of agriculture is to feed people and to feed ourselves, people forgot that”* – presented as the main function by ten farmers: one neo integrated system, two neo organic systems, three rural alternative systems and four rural conventional systems, and as a secondary function by two. If everyone knows about this basic function, farmers do not always think to mention it. It seems of higher importance for the ones working with short supply chains, who have direct relations with consumers.

- **Support rural life**: makes a living for families, create jobs, transmit sustainable farming systems, conserve local assets, create local economics, and respect former farmers’ work – *“We should respect and maintain what past farmers realized, they had good reasons to do what they did”, “We creates job opportunities, we help families to make a living and maintain rural life”* – presented as the main function by three rural conventional farmers and as a secondary function by six from all kind of profile. Supposition is done that this point seem more important to rural farmers as they have always been into this rural life and have witnessed it evolution in parallel with farming.

- **Educate consumers and create awareness** – *“We have a responsibility of creating awareness from consumers, make them realize that we cannot produce tomatoes or strawberries in winter”* – presented as a secondary function by one farmer. This last point is at the margin but of interest, it considers that farmers have a role to play in educating consumers by refusing to follow the productive scheme and offering them something different. This point was developed by a young neo organic farmer. It is opposed to others, rural conventional as well as neo farmers, who were criticizing consumers for not supporting local farming – *“They look for cheap food, they don’t want to pay the price for local quality food”*. It reflects a different perspective of local issues, in one side I find a farmer questioning himself and his role to play toward consumers, and on the other side farmers that are criticizing consumers and observe a certain disconnection between farmers and society. Only one farmer was found to question himself on this issue, it is difficult to assess what influenced his perception.

Globally, I did not observe much influences of the different typologies on farmers’ perceptions of their activity’s role. Indeed, apart from education which was only mentioned by one farmer, typologies are mixed up in the different ideas and no clear distinction is coming out when looking at one idea or one typology. What appeared were rather convergences and divergences between and within farmer profiles.

- Outsiders perception

After talking about what they perceive as the main functions of farming, farmers were questioned about civil society's perceptions of these functions and of agriculture in general. Once again, the results were various. Eleven **farmers affirmed being perceived negatively**, as polluters and their farming activity seen as a subsidy-driven production, reflecting a break between farmers and consumers – *“People have a negative image of agriculture, we are seen as polluters that take advantages of subsidies, they only look at the intensive productions and do not realize the work we do locally”, “Consumers are totally disconnected, they just buy their food in supermarkets”*. There were seven rural conventional farmers, one rural farmer with an integrated system and three neo with either organic or integrated systems.

The split between farmers and society was mentioned by a majority but seven farmers had a nuanced approach: two rural conventional, one rural traditional, one rural organic and three neo organic. This group was making a difference between two groups of people: the ones conscious of farmers' role and importance (usually country people or people looking for local quality food) and the others who denigrate farmers (either people who do not care or city people) – *“There are different kinds of people, some that realize what we do and others that see farming as a disturbance creating noise, pollution...”*.

Only four farmers expressed a positive image of the society on farming, all of them being rural and one with organic practices, they seemed to be either unaware of any criticisms or optimistic seeing a change in consumers' habits – *“Consumers awareness is rising, it's improving, especially in rural areas where people are in direct contact with farmers”*.

Two farmers, had no ideas on that question, one neo and one rural with traditional system, they did not know what others thought about their activity and did not really care.

Farmers globally agree that there is a disconnection with civil society. This is not specific to this study area but rather a general trend related to globalization. Farmers from every profile share similar perceptions on this general issue faced by our society. This question did not bring more insights on cultural factors influencing farmers but rather confirm a common issue met by every farmer. It allows replacing farmers in the actual context and understanding how they place themselves within civil society.

- Sustainable farming

During the interview, farmers were asked what they associate to “**sustainable farming**”. The results are represented and quantified in figure 4. This quantitative approach, further used in figure 5, is not intended to shift from a case study mode to a survey mode but rather to provide a support to the results presented here. This multimodal text, with visual representation of ideas expressed by different groups, gives another idea of the tendencies presented. The main ideas expressed when talking about sustainable farming are represented; the number of farmers in each profile (legend) can be compared to the number mentioning each idea and represented in the columns. It also helps figuring out who expressed which idea – even though the results do not show big differences between typologies.

Farmers’ answers were various and for some of them related to their system, **perceiving what they do as the definition of sustainability**. Three neo organic farmers defined sustainable agriculture as an agriculture in which everybody grows organic, with many small farms. Seven farmers, conventional as well as alternative, defined it as “*the agriculture we practice*”. They added that local farming was a clean, low-input activity with **diversified biodiversity-rich systems**, and that local conditions would not allow for intensive unsustainable systems. In that sense, maintaining what is being practiced locally could be the best option to maintain biodiversity and promote sustainable farming. Yet, one conventional farmer said that agriculture was actually not sustainable and would require more small farms and fewer big farms.

Several farmers talked about integrated, **low-input systems** that would use fewer chemicals (pesticides, fertilizers). This was not associated to local systems, which are already perceived as integrated systems, but looking at high-input farms in other regions. However it was **not mentioned by any conventional farmers**.

Locally, sustainability is associated to **short-supply chains and local quality products**. These systems are usually presented as **small-scale diversified and autonomous farms** that would integrate the environment into well-balanced activities (e.g. chestnut production and sheep herding). Such a definition of sustainability represents in most cases the systems farmers are into. “*For me, sustainable agriculture is a system which is diversified and as autonomous as possible*” (quote from a farmer). Few farmers with small farms said that maintaining small-scale farms rather than large ones would be more sustainable – “*Everybody should first take care of his land rather than trying to get 100 ha and abandon the worst lands, when you have little land you realize how important it is and you try to take the best out of it*” (quote from a farmer).

On the other side, a conventional farmer mentioned the impossibility to have every farm with small systems as there is no place for everybody in such model and it would be a problem for consumers who cannot afford local quality products.

The **economical factor** also appears to be important in order to create a living, make job opportunities and insure long-term resilience, especially for rural people.

Other farmers looked at factors around farming systems rather than the systems themselves. Sustainability was then perceived as a **simplification of standards and a reduction of constraints** combined with fairer repartition of subsidies between farmers which could promote farmers settlement and support the development of small farming systems and local projects.

On that question a distinction can be made between farmers promoting **small diversified systems**, looking at sustainability at a global level, and farmers were satisfied with what they have, looking at the farm level sustainability. The diversity of answers and the lack of evidences in relation with the typologies make it difficult to withdraw conclusions. However, it was interesting to see some farmers in bigger systems saying that more diverse small systems would be more sustainable.

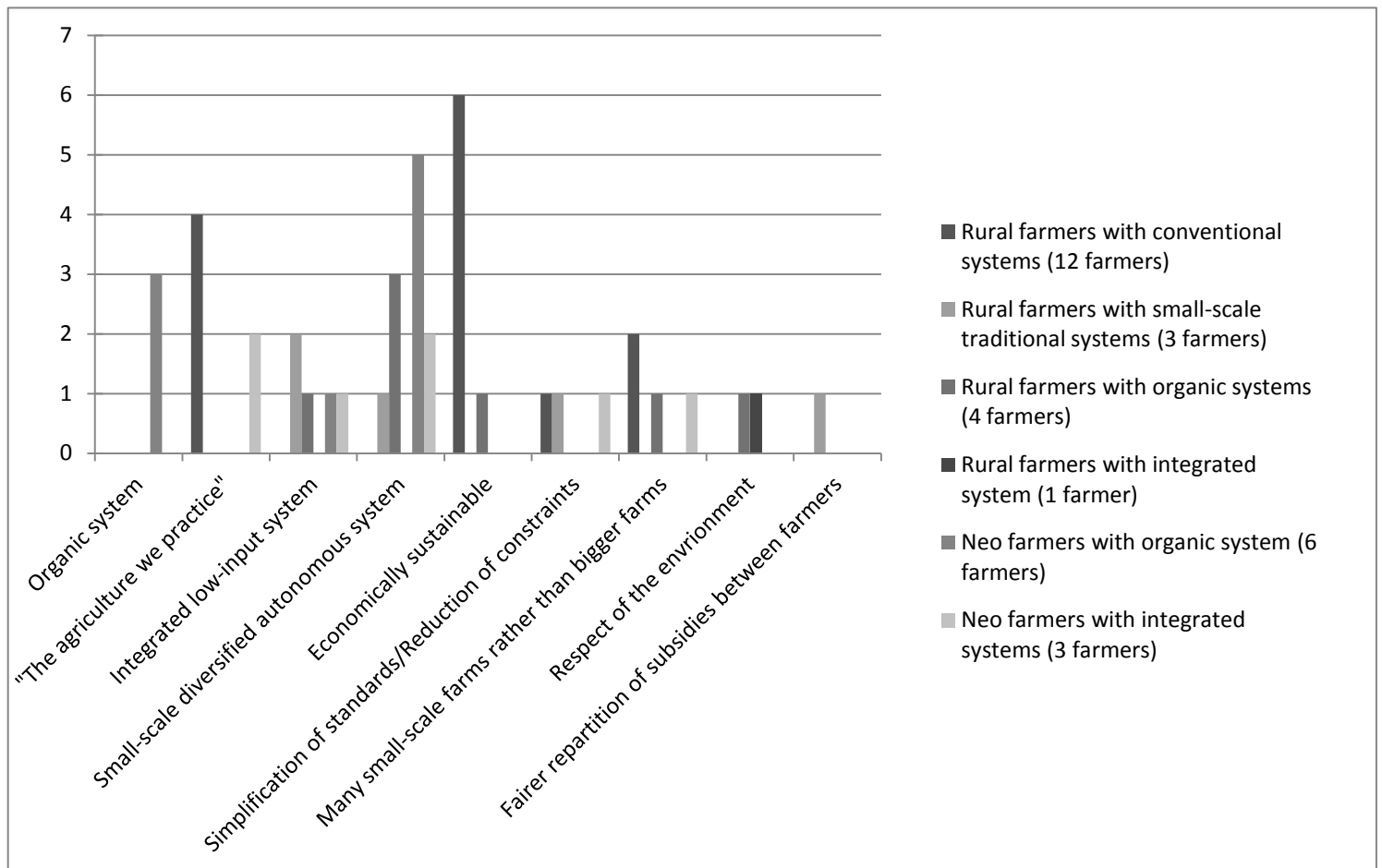


Figure 4: Farmers' perceptions of sustainable farming

3.5. Farmers' perceptions of biodiversity

After talking about agriculture, farmers were asked about biodiversity, their perceptions of it and the issues they relate to it. Figure 5, as figure 4, tries to give a complementary representation of the results.

To the question about the meaning of biodiversity and what they would associate to it, farmers had diverse answers but shared a similar opinion on most of them.

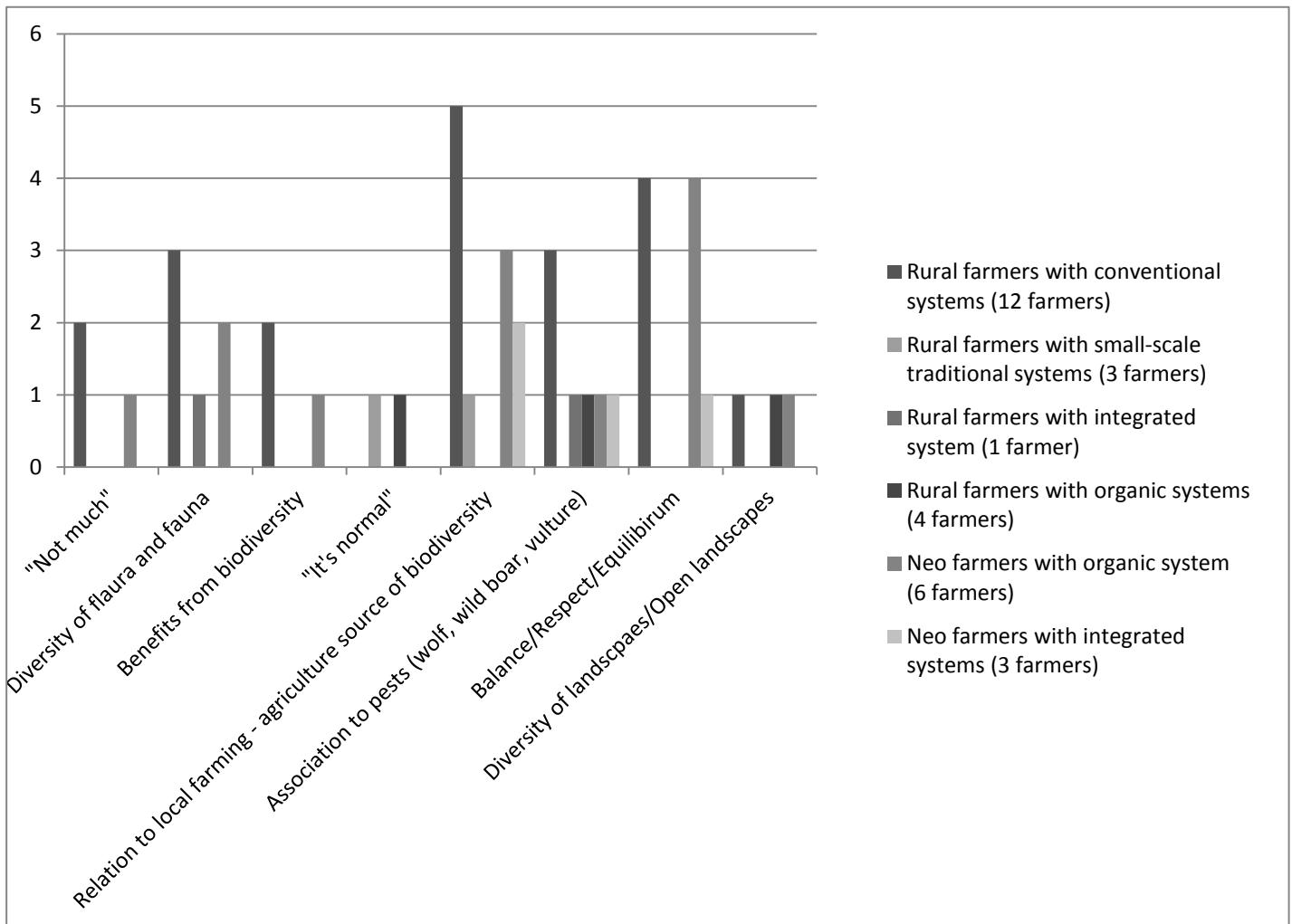


Figure 5: Farmers' perceptions of biodiversity

A diversity of answers from every farmer's profiles can be observed. Some farmers mentioned several points, especially the neo organic and rural conventional, whereas few had no idea about the subject.

In general, farmers seem aware of the **relationship between agriculture and biodiversity** but it is mostly in the sense that **agriculture maintaining biodiversity**, rather than ecosystem services that biodiversity brings to agriculture. Only three farmers did mention some benefits from

biodiversity, neo as well as conventional, and 7 from every profile associated it to potential damages caused by wildlife – here perceived as pests – to their farm.

Most of the farmers who presented agriculture as a driver for biodiversity insisted on the sustainability of local farming practices – *“Farms are diversified here, they have a visible interest for biodiversity, they are many natural elements (hedges, forests, grasslands, rocks...), there is a balance, equilibrium between agriculture and nature locally”*. Local agriculture is presented as integrated to its environment with natural constraints preventing any harmful intensification. One farmer – a neo organic – said that, because of natural constraints, they had no other choice but to work with nature. Every farmer met was well aware of the benefits of local diversified farming systems for biodiversity. The opposite is not so obvious, and it looks like many farmers, from every profile, are not conscious of the services brought by biodiversity.

These results are interesting to gather an overview of farmers’ perceptions of biodiversity. If the representation of farming as a factor of biodiversity could be explained by local context, I could not bring much insights on cultural factors influencing other perceptions.

4. DISCUSSION

The results assess the diversity of farmer profiles and corresponding systems. The richness of diversity found in the study area made it a good place to study different farmers' profiles and associated perceptions. It is clear that farmers' perceptions do not depend on a single factor, but are rather shaped by a complex system with sociocultural, economic and environmental factors, which makes it difficult to find out convergences and establish an adapted typology that can fit every farmer. In the literature, authors relate farmer typologies to different criteria such as farming characteristics, farm size, age or attitudes. To answer the research question, the focus was made on cultural factors. From general data collected during interviews about farmers and their farms, what could be associated to cultural criteria was identified and analyzed.

4.1. Influences identified as cultural factors

Farmers' origin was a criterion to draw farmers' profile and appeared to be important to uncovering farmers' perceptions. Distinction between neo and rural farmers was observed, which might be explained by different backgrounds. They may be expected to have a different approach to their activities because they have evolved in different social environments.

Clayton, in her study on social psychological model of behavior (2005), explains that behavior is a result of a person's past experience, current context, knowledge and motivations. These criteria are influenced by a social environment made up of other people (Allport 1985 in Clayton 2005) with information and norms shaping ones behavior: "Nature is not just a physical reality to which people respond but a social construction whose meaning has been learned" (Clayton 2005, p. 91).

Rural farmers act based on what they have seen their parents doing and what may be expected from them: taking over the familial farm and keep developing the activity. They seem to be stuck to a system, the one they have grown up with, they have been taught and they are still supported by public policies. They have always seen the same scheme going on and follow what they think to be the "norm". It seems difficult for farmers to rethink their system toward other farming practices, questioning it might be seen as questioning the family and the whole profession which is not well-perceived (Nature Humaine 2012). Moreover the reduction of mechanization or use of products, that might require more hand-work or a redesigning of the farm, might be perceived as a regression and a backward evolution, after the progress achieved thanks to their use. Kurt Lewin, in his model of change (1947), talks about a "freezing stage". He explains that people who have already made a change are not willing to change again. This idea is used to explain

farmers' reluctance to change their practices, in addition to other obstacles such as fear of failing new practices, fear of being looked at, criticized and excluded (Nature Humaine, 2012). Findings about outsiders' negative perception of farming reinforce this social pressure. Supposition can be made that farmers feeling so badly perceived by civil society will not risk losing the support they have from their rural environment, from their farmer network.

Neo farmers have learnt from a different context with personal experiences outside the farm. They have been influenced by a different social environment than farmers, with other norms and information, outside rural life, as rural farmers who have traveled for a while. They do not have familial pressure related to their farm, or decide to go beyond them, as it is their own choice and realization. All of this brings them specific views on agriculture that will affect their views toward biodiversity.

- Education

Farming training is seen as additional sources of information and norms shaping farmers behavior. Education brings another insight into agricultural practices, especially to rural farmers, giving them the opportunity to learn about different systems than the one they grew up with.

The three farmers who had no training but learned from their parents and took over the familial farm were all rural farmers with small-scale traditional system. They had no external source of information and continued the traditional practices of their predecessors. Here, lack of education influenced the farming system but no relation is made to farmers' perception of the environment. When looking at farmers' perceptions of their role, every profile was represented when talking about "environmental management", even traditional farmers who have not had education. They can be compared to "traditionalist", one farming style defined by Schmitzberger et al. (2005) as mountainous old farmers who are interested in traditional rural culture and are very good at nature conservation through their traditional farming practices. These traditional farmers appear to be more into environmental-friendly dynamics, contrary to results from Paineau et al. (1998). For them, training and information were key factors influencing farmers' perception and respect of the environment. They found that most farmers with higher education considered themselves as environmental managers and would rather integrate it to their practices. On the other side, farmers with no education or shorter training affirmed they would never become environmental manager. These divergences might reflect differences between study areas. Paineau et al. carried out their study in a highly productive rural area, marked by a majority of high-input large scale

farming systems. On the other side, my study took place in a hilly low-productive area where farmers have no other choice than working with nature.

Education appears to be a factor shaping farming systems, farmers' perceptions of their activity, but not necessarily of biodiversity. If some authors considered it to be an important factor, others did not find links between knowledge and individuals' construct of biodiversity (Fischer et al. 2007). Education should not be viewed in isolation but rather interacting with other socio-economic factors (Mills et al. 2013).

- “Out-of-the-farm” experiences

It seems that rural farmers who have experienced different systems than the one they grew up with – through travelling experiences or farming in a different way – practice a different approach to their activities. Given the small sample of farmers following this scheme it is difficult to confirm that this “out-of-the-farm” experience is the reason for them to have a different profile than their colleagues. However, it fits with the typology established and can be considered as an influencing cultural factor for rural farmers with organic or integrated systems – neither conventional nor traditional. Only one rural organic farmer do not follow this tendency, he might have forgotten to mention some experiences he had before taking over the familial farm, or other factors may have come into play in his choice to convert to organic. This finding agrees with Clayton's ideas about past experiences influencing a person's behavior. Outside experiences, especially travelling, is expected to open farmers' mind and bring them new understandings of agriculture and biodiversity. Outside activity and responsibility is another source of information that encourages greater awareness toward environmental factors. It also increases the open-mindedness of farmers engaging in such activity (Paineau et al. 1998).

Farmers' participation to organizations did not appear as a factor related to their typology but rather as a personal choice, some farmers preferring to work on their own and others together. If no link can be drawn between farmer profiles and their activism in organizations, similar trade-union affiliation from similar profiles was observed.

Trade-union affiliation was mentioned by some farmers and seems to be one factor shaping their behavior. Farmers affiliated with specific trade-union will have a tendency to follow its ideas and identify to the social group it creates, which in turn influences their behavior. Identity developed through this membership supposes social pressure, and questioning it might be difficult. The trade-union affiliation is maintaining farmers in the system it promotes and it might be difficult for a farmer to go against it. In 2005, Clayton analyzes similar group dynamics, together with her

theory on social constructivism of nature, and suggests creating new identities that could bring different people together toward a common goal.

4.2. Farmers' perceptions of farming

To identify farmers' ideas of agriculture and biodiversity, they were asked several questions about this topic. Different subjects were broached in order to get a global understanding of their perceptions and analyze them through typology. Knowing individual context of farmers and how they situate into it helps develop a better understanding of public views (Fischer et al. 2007). Moreover, examples of social constructions of nature and expectations for future would allow better discussion and reflections on individuals' relations with nature (Hull et al. 2001).

The results previously reported reflect the diversity and similarities within farmer community, well represented in the study area. Farmers' perceptions were heterogeneous, but most of the time farmers from different profiles did share similar ideas, and farmers from similar profiles had different opinions. Apart from farmers' personal characteristics, that allowed defining a typology, every subject broached during interviews was difficult to explain. Farmers' perceptions – of local farming, its evolution, role, outsiders' perceptions, idea of sustainable farming, biodiversity – appeared as a complex heterogeneous data base that could hardly be related to the defined profiles. Globally, they did not bring much knowledge on cultural factors shaping farmers' behavior, neither confirmed the typology. The results show a great heterogeneity, but also similitude between profiles, that were difficult to analyze. Rather than statistical and quantitative research, the study allowed exploration of diversity between farmers.

Regarding the importance farmers give to agriculture's functions, apart from the shepherds being mainly concerned with the landscape maintenance, cultural factor were not identified as strong influences. When trying to understand mental constructs of biodiversity, Fischer et al. looked at views on the role of humans in nature. They use group discussions and distinguish humans living in rural areas, who perceived human culture as compatible with nature, to outsiders seeing human presence as harmful to nature. Groups were made trying to cover a cross-sector of the general public and looking at the individuals' background. Over the general public interviewed, farmers defined humans as active managers of nature, "shaping and promoting biodiversity in the rural environment" (Fischer et al. 2007 pp. 278), which is similar to the results from local interviews. It contrasts with other actors perceiving humans as either users or enemies of nature, illustrating the negative view of agriculture that was perceived by farmers from outsiders. These different views resulted in different attitudes towards how management should take place (Fischer et al. 2007). It appears important to integrate them all into decision making to find out

solutions. Actions should be adapted to the majority, and avoid potential conflicts between groups because of different constructs of nature (Peterson 1995 in Hull 2001). Another point mentioned in agriculture's role was the provision of quality food. It is interesting that this basic function is shared by several but not the majority of farmers; it reflects a change in the expectations of civil society toward agriculture that has been integrated into farming systems. Farmers' primary production appears as evidence that is often forgotten, to focus on other services provided by farmers. It agrees with the hypothesis supported by Dockes et al. (2007) that values from civil society are of increasing importance to farmers. For Dockes et al. farmers identity is evolving a lot but remains very diversified, which was confirmed in this study.

4.3. Farmers' perception of biodiversity

When looking at farmers' perception of biodiversity, two points are coming out: most farmers agree on the relations between agriculture and biodiversity, in the sense of agriculture maintaining biodiversity; but farmers have different ideas when defining biodiversity and what it can bring to agriculture.

The first result can be linked to biodiversity challenges of this Natura 2000 site (appendix II). When looking at dynamics between agriculture and biodiversity it is clear that local farming as a role to play in maintaining biodiversity, through open landscape and habitats diversity. Replacing farmers in this local context might explain their perceptions; most of them have seen the landscape closing and wilderness growing, and with it a change in local species. As a result they are conscious about the importance of farming for biodiversity and try to promote their activity as a biodiversity driving force. Here it can be assumed that local context influences their perception of agriculture and biodiversity relations. No matter their system and typology, it is their activity which is important to the territory and that bring them all together under similar perceptions. It seems that being in a similar area with similar dynamics – such hilly area does not allow highly productive farming – brings farmers together as regards to their perceptions of interactions between agriculture and biodiversity. Moreover, they might be willing to revalue their activity which has been quite underestimated, as regards to their idea of outsiders' perceptions of agriculture.

If most of them agree on the relation between agriculture and biodiversity, they differ when looking at biodiversity in itself and what it can provide them. Few farmers sounded positive about biodiversity: only three talked about the benefits they could get from it whereas seven associated it to pests. Such differences are difficult to analyze as they do not seem to relate to typology, they might be related to other factors such as personal experience.

For the majority of farmers, diversity of wild species appeared more relevant than diversity of ecosystems and genes, even though perceptions of species diversity were not uniform. No farmers talked about diversity of genes and few of ecosystems but species diversity was mentioned several times in different ways: some species were presented as pests by some and not by others (e.g. vultures). Existing schemas might influence farmers' definition of species as pests rather than valuable elements of ecosystems (Clayton et al. 2005).

Similar results appear when looking at results from Herzon et al. (2007), in which different concepts are included under farmers' views of biodiversity.

In Herzon et al.'s study, the term "biodiversity" was not clear for most farmers who would rather use other terms such as nature or fauna and flora. Understanding of and associations made with the term "biodiversity" caused different reactions: confusion, definition, and critical comments, depending of individuals' perceptions, beliefs and values (Fischer et al. 2007). Such reactions could be identified in this study but beliefs and values associated with them could not be determined. Nevertheless, if farmers with different profiles did share representations of biodiversity, it supposes that it is related to the study area where farmers have no other choice than working with nature, due to local natural constraints. They have different relations to nature and biodiversity than farmers working on highly productive and mechanized lands.

The perception of biodiversity was initially defined as the core of this research but could not be developed as much as perceptions of agriculture, due to a lack of data and results from the interviews. If farmers' definitions of biodiversity and what they associate to it could be identified, I could not relate these different views to the typology, or find any logic regarding farmers' profiles and corresponding perceptions, apart from their perception of agriculture serving biodiversity. The results are in agreement with Fischer et al. (2007), who found a great variation between individuals on the way they perceived biodiversity. Their sample was composed of members of the general public, of whom farmers considering biodiversity as a resilient body and its management as a constraint for their activity – which is similar to some results presented previously. They insist on the importance of norms as very influential to individual constructs of biodiversity, also mentioned by Clayton as a component of social environment.

Paineau et al. (1998) did not find any link between farming systems and farmers' perceptions of nature, for them knowledge and information are the major factors shaping individuals' view on the environment. On the other side, Schmitzberger et al. have a farming approach, trying to show

how farmers' economic situation, personality and attitudes interplay and influence biodiversity maintenance in agricultural landscapes. From an integrative typology regarding at farmers' mentality, economic situation and attitudes toward agriculture and nature, they manage to classify farmers according to distinct farming styles. They show that biodiversity at the farm level correlate with different farming styles. Their sample was composed of 8 study areas spread over the territory, in order to cover the diversity of landscape types, and 23 farms. Their results compared to the results found here, might suppose that the typology established could have been further developed, integrating criteria additional to what was defined as cultural factors. The focus on sociocultural influences might have masked some other important influences. Information about technical, agricultural practices and economic aspects are relatively poor and could have been interesting to explain some results. It brings out a lack of data collected through interviews.

The diversity of answers collected from the interviews was not necessarily of importance for the research question, but they added to the numerous factors influencing farmers' perceptions and behavior – social, psychological, physical, personal and may explain the difficulty to identify the relationship between farmers, their perceptions and potential cultural factors in between.

4.4.Limitations

In regards to my results, several parts of the methodology used in this study should be questioned.

The sample of 29 farmers might have been too small to find clear evidences. I also suppose that taking the whole sample within a same area may misrepresent potential cultural factors. As presented earlier, the area is very diverse but all of the farmers met are situated within the same valley and are thus living with similar dynamics and cultural influences. In this sense, it could have been interesting to expand the study to a different region, carrying out similar interviews with another sample location, comparing it to these results.

Regarding interviews, the guide might have been too oriented on farmers' perceptions of agriculture with little space for biodiversity and related farming practices. As mentioned previously, some additional factors should have been considered, and could have explained some results. It would be interesting to look at practical aspects of the farms visited in order to get a broader vision of farming systems and compare farmers' perceptions to their current practices, and on-farm biodiversity.

If the choice of not recording farmers appeared as a good point to let them express themselves, it is also a weakness: farmers' voices would have been good to bring in references and restate more direct statements. It could have helped not to depend only on interpretations done through analysis grid but also on real sayings.

The study being carried out at the same time as the internship, had different expectations, it was also complicated to combine the two projects.

Finally, the difficulty to answer the research question may be a result in itself as well. It shows that even though farmers are criticized and put into boxes, it is not easy to classify them. Each farmer has perceptions that are usually reflected by the farming system. However, many factors come into play and may influence these reflections. Everything from the social environment to economic values and personal values, influence individual behaviors and the result is complex factors interacting and evolving over time and space (Schmitzberger et al, 2005; Clayton, 2005). As presented by Greider and Garkovich (1994) in Hull 2001, "diversity of definitions of naturalness reflects the diversity of cultures, values, beliefs, and purposes of the people doing the defining" (Hull et al. 2001, p. 327).

5. CONCLUSION

Farmers' perceptions of agriculture and biodiversity are shaped by a complex system in which multiple factors interplay: from sociocultural to technical, psychological and environmental. As a result, a great heterogeneity was found in individual worldviews and corresponding behaviors, of which farmer communities are a good example.

Cultural factors shaping farmers' attitudes are difficult to distinguish from other influences. In this study, a few criteria were identified as cultural influences and used to define farmers' profiles: farmers' origin, out of farm experiences, education and, as regards to biodiversity perception, local context. They reflect different social environments and knowledge, both are important elements of individuals' perceptions.

A typology was developed and farmers were classified according to their personal characteristics in order to identify analyze cultural factors. If each farmer could be related to the profiles defined, and differences and similarities between them identified, no link was made to the results about their perceptions of agriculture and biodiversity. This lack of connection between typology and perceptions was justified by the influence of other factors that had not been considered. Other limitations were found in the methodology: the confinement to the study area appeared as a boundary to cultural factors researched – local context being already an influence; similar inquiries in other rural area could be interesting in order to compare results, values, and the importance of local context. Moreover, when looking at interactions between farming and biodiversity which was the core of this research it could be valuable to look further at individuals' concrete relations to biodiversity, by looking at on-farm actions and interactions beyond representations.

In conclusion, farmers' view on biodiversity are not limited to cultural factors but a result of many influences creating a great diversity, which requires local approaches in order to be accepted and integrated by the majority.

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APPENDIXES

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Appendix I: The Natura 2000 project in the Eyrieux valley

Natura 2000 is a network of nature terrestrial and marine protection areas. It was established by European Union in 1992 under the Fauna Flora Habitat Directive, in complement of the Bird Directive from 1979. Its aim is to ensure long-term survival of valuable and threatened species and habitats, to promote biodiversity and valorize natural assets. It requires the establishment of Special Protection Areas (SPAs) for the Bird Directive, and Special Areas of Conservation (SACs) for the Habitat Directive, identified by each member state.

Natura 2000 is not a system of strict natural reserves excluding every anthropogenic activity; it rather intends to promote working in partnership to achieve nature conservation objectives. Territories identified as Natura 2000 are subject of in-depth inquiry to identify human as well as natural challenges. Sustainable management is looked at from ecological and socioeconomic perspectives in order to develop action plans adapted locally.

In France, 1753 Natura 2000 sites are spread over the territory covering a high diversity of habitats and species. The Natura 2000 B6 site “Vallée de l’Eyrieux et ses affluents”, which is situated in the study area, joined the network in 1998. However things have only started to move since 2011, when the river syndicate “Syndicat Mixte Eyrieux Clair” was chosen to be the host structure. Animation supposes connecting local inhabitants together and with their environment in order to have participatory approach and to develop action plans adapted locally. This area is spread over 20 173 hectares, mostly situated along rivers, and covering 33 municipalities. Thanks to important climatic and topographic diversity, this area presents a high diversity of habitats, species and landscapes.

Actually, the B6 site is carrying out an in-depth inquiry to define local goals and related action plans. In that process, it appeared essential to include local actors, especially farmers, who have a direct impact on biodiversity through their activity. For that reason, a 6 months internship was proposed to look at local agriculture, its challenges and dynamics and its relation to biodiversity. This project was expected to develop action plans, in collaboration with local farmers, to promote dynamics between local farming and biodiversity.

The internship took place at the same time of the research and followed a similar methodology. Results were reported through a public presentation to farmers interviewed as well as technicians and general public. This meeting allowed presenting outcomes of the study but also exchanging with local actors and inhabitants on the Natura 2000 project and on various subjects related to agriculture

and biodiversity. A report was also produced and published as a result of this six months internship. It can be consulted on the “Natura 2000 site B6” website.

Sources: www.developpement-durable.gouv.fr ; <http://vallee-eyrieux-et-affluents.n2000.fr/>
(Retrieved August 2014)

Appendix II: Dynamics and challenges of agriculture and biodiversity in the study area (Source: *Naturalia*)

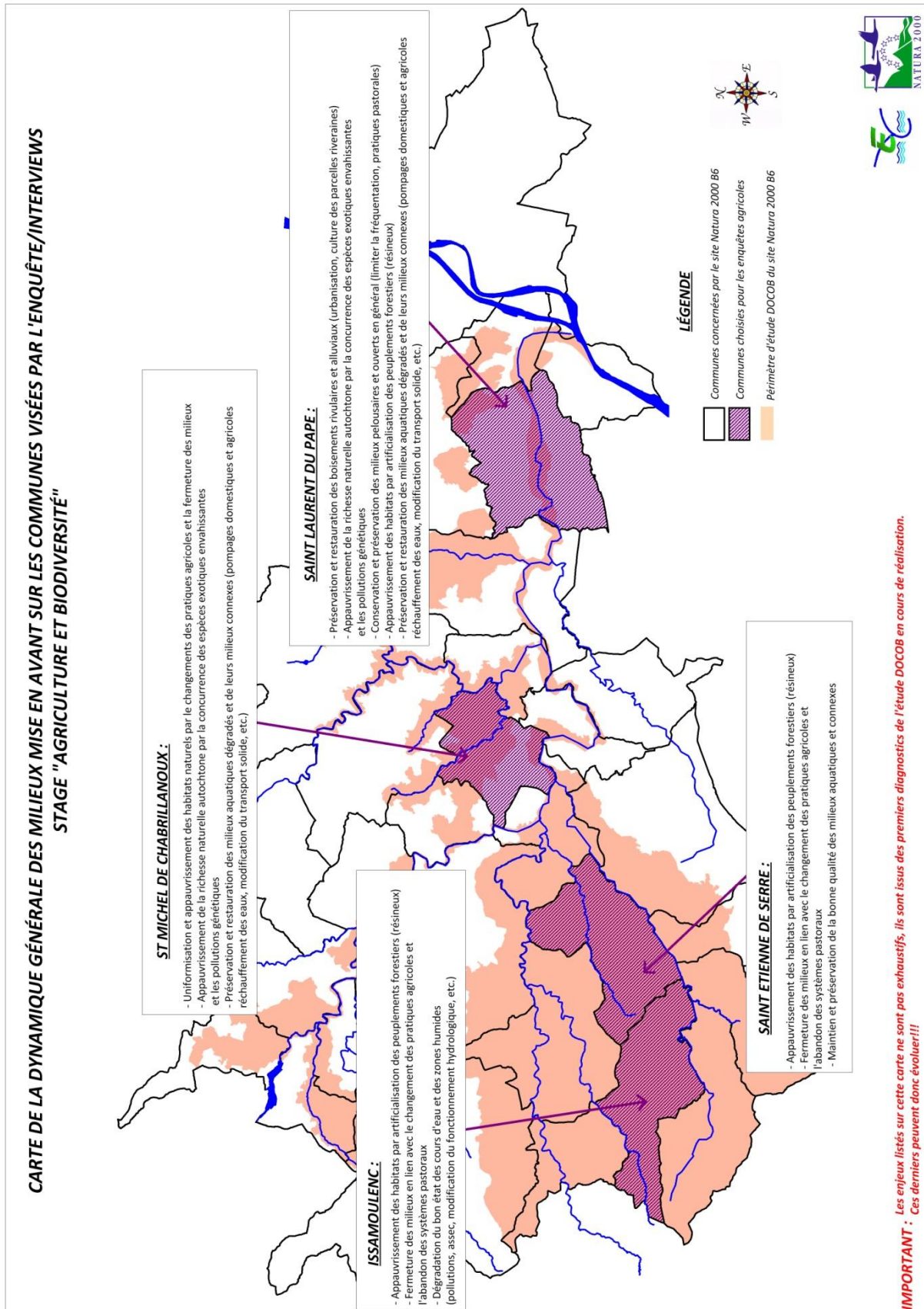
This document was made for the Natura 2000 project and is still under construction, it gives a broad idea of dynamics and challenges of local farming activities as regards to biodiversity.

AGROSYSTEMES	CONSTAT	BIODIVERSITE FONCTIONNELLE	ELEMENTS PRECIS DE BIODIVERSITE	RISQUES POTENTIELS	PRECONISATIONS DE GESTION
Castanéculture et fruitiers	Elément clé de l'organisation paysagère du site	<p>Cortèges saproxylophages riches dans les vieux vergers et taillis de châtaigniers.</p> <p>Importance pour les insectes pollinisateurs (sous réserve des traitements phytosanitaires réalisés), afin de maintenir une apiculture de qualité sur le territoire.</p>	<p>Avifaune : Bondrée apivore</p> <p>Invertébrés : Lucane cerf-volant, Grand capricorne</p> <p>Chiroptères : Murin de Bechstein, Grand Murin, Barbastelle, Grande Noctule, Murin de Brandt</p> <p>Habitats naturels : 9260 - Forêts de <i>Castanea sativa</i> ;</p>	<ul style="list-style-type: none"> • Une exploitation intensive qui empêcherait le vieillissement des boisements • Introduction de conifères (Ajoux, St-Julien du Gua) • Abandon généralisé de la castanéculture en Ardèche 	Conservation des surfaces de châtaigniers exploités, tout en préservant des îlots de vieillissement permettant ainsi une hétérogénéité des habitats.

AGROSYSTEMES	CONSTAT	BIODIVERSITE FONCTIONNELLE	ELEMENTS PRECIS DE BIODIVERSITE	RISQUES POTENTIELS	PRECONISATIONS DE GESTION
<p>Agro-pastoralisme</p>	<p>Elément régulateur de la dynamique de la végétation. Permet une diversité des assemblages paysagers.</p>	<p>Plusieurs espèces de papillons se maintiennent difficilement du fait de l'embroussaillage de leurs habitats par abandon des pratiques.</p> <p>Milieus indispensables à la faune vertébrée telle que les oiseaux macro-insectivores (Bruant ortolan, Alouette lulu, etc.), les chauves-souris (alimentation, déplacement). Certaines espèces nichent au sol, comme notamment le Buzard cendré dans les landes à genêts.</p> <p>De même, les reptiles comme le Seps strié ou le Lézard ocellé dépendent de la présence de milieux à dominance herbacée avec présence de gîte (murets en pierre, etc.).</p>	<p>Avifaune : Bruant ortolan, Alouette lulu, Pie-Grièche écorcheur, Fauvette pitchou, Circaète Jean-le-Blanc, Bondrée apivore, Buzard cendré, Milan royal.</p> <p>Chiroptères : Petit Murin, Petit et Grand Rhinolophe, Minioptère de Schreibers</p> <p>Invertébrés : Mercure, Azuré des orpins, Azuré du serpolet, Hermite, Dectique des Brandes, Criquet de l'Aigual</p> <p>Reptiles : Lézard ocellé</p> <p>Habitats naturels : 4410 - Prairies à Molinia sur sols calcaires, tourbeux ou argilo-limoneux (Molinion caeruleae). 4030 - Landes sèches européennes ; 5120 - Formations montagnardes à <i>Cytisus purgans</i> ; 6210 - Pelouses sèches semi-naturelles et faciès d'embuissonnement sur calcaires (Festuco-Brometalia) ; 6510 - Pelouses maigres de fauche de basse altitude</p>	<ul style="list-style-type: none"> Abandon du pâturage favorisant l'embroussaillage et la disparition de pelouses sèches et de landes. (Saint-Julien-du-Gua, Creyseilles, St Genest-Lachamp) Mise en culture des prairies humides Surpâturage Retournement des prairies 	<ul style="list-style-type: none"> Définir les zones délaissées par le pastoralisme et en cours d'embroussaillage. Localiser les secteurs de pelouses sur-pâturés ainsi que les prairies en mauvais état de conservation, identifier les causes et travailler en concertation avec les paysans pour orienter les parcours. Adapter les périodes de fauche. Privilégier l'utilisation du fumier pour l'épandage.

AGROSYSTEMES	CONSTAT	BIODIVERSITE FONCTIONNELLE	ELEMENTS PRECIS DE BIODIVERSITE	RISQUES POTENTIELS	PRECONISATIONS DE GESTION
<p>Cultures annuelles</p>	<p>Peu représentées sur le site, essentiellement dans la basse vallée de l'Eyrieux.</p>	<p>Leur situation ne permet pas en l'état l'établissement d'une communauté animale spécifique à valeur patrimoniale.</p> <p>Zones fonctionnelles utilisées pour l'alimentation de l'avifaune (Milan noir et Bondrée apivore pour exemple), et pour le déplacement d'autres espèces comme les chauves-souris.</p> <p>Les haies permettent de servir pour la nidification d'oiseaux, et plus généralement de zones refuges pour la faune, en plus de leur rôle dans la conservation des sols, la lutte contre l'érosion.</p> <p>La présence d'auxiliaires de cultures permet une lutte biologique permettant de limiter les traitements chimiques.</p> <p>Les canaux agricoles abritent également d'autres espèces comme l'Agrion de Mercure en basse vallée de l'Eyrieux.</p>	<p>Avifaune :</p> <p>Bruant ortolan, Alouette lulu, Pie-Grièche écorcheur, Fauvette pitchou, Circaète Jean-le-Blanc, Bondrée apivore, Buzard cendré, Milan royal.</p> <p>Invertébrés :</p> <p>Agrion de Mercure, Diane, Ecrevisse à pieds blancs</p> <p>Chiroptères :</p> <p>Petit et Grand Murin, Petit Rhinolophe</p>	<ul style="list-style-type: none"> • Introduction d'intrants (effets d'eutrophisation) • Pompages • Disparition de zones agricoles ouvertes de plaines favorables à l'accueil des individus en maturation (Les Ollières-sur-Eyrieux, St-Sauveur-de-Montagut) • Curetage/rectification/busage de certains fossés agricoles • Dégradation des habitats de l'écrevisse à pieds blancs (sous berges) par piétinement du bétail, et augmentation des matières en suspension 	<ul style="list-style-type: none"> • Valoriser les petites exploitations, la polyculture et les circuits courts. • Limitations des emplois de produits phytosanitaires afin de conserver la biologie des sols dans un bon état, indispensable pour une agriculture de qualité et durable. • Utilisation de semences adaptées au climat et à la nature des sols locaux. • Favoriser l'autonomie fourragère des éleveurs.

Appendix III: Map of environmental dynamics of towns selected for interviews



Appendix IV: Interview guide

GENERAL INFORMATION (15')

1. Can you tell me more about yourself, your history and how you got here ?

(Farmer's profile: Name, age, activity, history, training, membership to any farmers' organization, information network, etc.)

To help developing some important points:

- (training) How did you learn to be a farmer?
- (motivations) What were your motivations?
- (history/origin) How did you come to this farm?
- (professional activity) Is farming your main/only profession?
- (networks/information) Are you member of any organization and/or information network?

2. Can you tell me more about your farm?

(Size, situation, specificity of the area, farming practices, number of workers, farming system, etc.)

- Could you tell me more about your farming practices, your crops/livestock/productions, the history of your farm, etc. (self-sufficiency, production diversity...)
- Are you into any specific farming system (organic, low-input, traditional...)
- How do you manage your lands? What are your farming practices?
- Do you practice stubble-burning?
- Terraces? Irrigation? Wilderness areas? Importance of subsidies?

EVOLUTION/FUTURE PROSPECTS (15')

3. Can you tell me more about your farm evolution? And about local evolutions on the territory?

- What major changes? Why/What for?
- What obstacles or opportunities did/do you meet? (cultural, economic, social, technical)

4. How do you picture your farm in future? And local agriculture?

- Do you have any projects, desires, needs? Have you thought about any change?
- What are the main issues/challenges (today and to come)?
- What are the opportunities and/or obstacles toward change?
- Quels sont les opportunités et/ou freins au changement ? How do they appear?

5. What is the role of farming locally? And at a bigger scale?

6. How do you think people perceive agriculture? What do they think about it?

- What image do they have of agriculture and farmers?
- How do you see relations between agriculture and civil society? And relations between farmers locally?

PERCEPTIONS OF AGRICULTURE AND BIODIVERSITY (30')

7. Nowadays, we can hear people talking about sustainable development, how would you define sustainable agriculture? What does it represent to you ?

8. And if I tell you biodiversity, what does it depict?

- In your opinion, what are the relations between agriculture and biodiversity (positive as well as negative) (opportunities and threats of interactions between nature and culture)?
- What are the environmental functions that might be useful for farming?
- And agricultural function useful for the environment, to biodiversity?
- For you, globally, does biodiversity represent something positive or negative? Why?

9. According to you, is biodiversity endangered? Have you noticed any change on your farm?

10. Can you tell me what farming practices, in your opinion, might have a positive influence on biodiversity?

- What do you think of using such practices?
- Why would some farmers use such practices? Or what are the obstacles to use them?
- Are you, or have you been taking part into any environmental project or environmental labeling? Quality products labeling?

11. What do you think of developing action plans to meet agricultural challenges and reinforce biodiversity on your farm?

- Alternative farming practices (agroforestry, agroecology, farmer groups...)

PERCEPTIONS OF NATURA 2000 (10')

12. Have you heard of Natura 2000? What and how do you know about it?

- Is it an approach that could support sustainable development and/or farming locally?

13. Would you like to take part of a participatory project proposed by Natura 2000?

14. Do you have any wishes, needs, projects, comments or anything else you would like to say?

Appendix V: Analysis grid of interviews

Date et lieu d'entretien :

INFORMATIONS GENERALES

- **PROFIL DE L'AGRICULTEUR INTERROGE**

NOM Prénom : Âge :

Si plus de 50 ans, avez-vous un successeur ? OUI NON

Activité professionnelle : Agriculteur Retraité Cotisant solidaire Autre :

Année d'installation :

Appartenance à une association d'agriculteurs : OUI NON Laquelle ?

Réseau d'information (culturel, communication, appui technique, etc.) :

- **PRESENTATION DE L'EXPLOITATION AGRICOLE**

Statut de l'exploitation : Individuelle GAEC EARL Autre :

Surface Agricole Utilisée (SAU) :

Nombre de **salariés** sur l'exploitation :

Type de pratiques : AB Agriculture raisonnée Agriculture classique Autre :

Situation (en référence à la carte):

Caractéristiques géomorphologiques : Zone de pentes Bord de cours d'eau Plateau Autre :

Zone spécifique ? Pas de zone spécifique PNR ZNIEF Zone Humide ENS Autre :

- **ACTIVITE (CULTURE, ELEVAGE, POLY-CULTURE-ELEVAGE, APICULTURE)**

ELEVAGE: Ovin Bovin Caprin Porcin Equin Volaille Autre :

Produits : Viande Lait Produits laitiers Œufs Laine Loisir Autre :

CULTURE : Maraîchage : Légumes Légumineuses Fleurs Plantes aromatiques Autre :

Châtaignes : Fruits Farine Produits transformés Autre :

Vergers : Pommes Poires Pêches Cerises Abricots Kiwis Prunes Autre :

Petits fruits : Myrtilles Framboises Autre :

Céréales : Blé Maïs Seigle Tournesol Avoine Colza Autre :

Autre :

APICULTURE OUI NON

Produits : Miel Produits transformés

AGRITOURISME OUI NON

BOIS/FORET OUI NON

AUTRES ACTIVITES ?

CULTURES

Utilisation des terrasses ? OUI NON

Description :

Rotations ? OUI NON

Description :

Labour ? OUI NON

Description :

Prairies de fauche ? OUI NON

Irrigation ? OUI NON

Déficit en eau ? OUI NON

Alimentation en eau :

Ecobuage ? OUI NON

Description :

Parcelles en friche/abandonnées ? OUI NON Pourquoi ?

Autres techniques de culture :

Raisons d'adoption des techniques :

INTRANTS ET TRAITEMENTS DES CULTURES ET DE L'ELEVAGE

- FERTILITE DES SOLS

Fertilisants ? Pas de fertilisants Fertilisation minérale azotée Fertilisation organique Autre :

Détail (origine, etc.):

- TRAITEMENTS

Type de traitement utilisé ? Produits phytosanitaires Lutte biologique Autre :

Détail (usage, type, etc.) :

ELEVAGE

- BETAIL

Taille des troupeaux :

Elevage : Extensif Intensif

Temps en extérieur (en % du temps de présence sur la SAU) :

Pâturage ? Aucun En pâture Châtaigneraie Parcours Autre :

Autres sources d'**alimentation** : Fourrages Concentrés Autre :

Autosuffisance alimentaire ? OUI NON

Si achat d'aliments, où, quelle proportion, quoi et pourquoi?

Usage du **fumier** : Revente Fertilisation des terres Autre :

- **APICULTURE**

Nombre de ruches :

Problèmes ? Frelon asiatique Varroa Champignons Pesticides Autre :

ECONOMIQUE/JURIDIQUE

- **REVENUS**

Origine des **revenus** : Production agricole principal revenu ? OUI NON

Revenu annexe ? Pas de revenu annexe Activité professionnelle complémentaire Autre :

- **SUBVENTIONS**

Importance des **aides et financements** (pour installation ou autres projets) ? OUI NON

- **PRODUITS**

Labels : Pas de label AOP IGP Label Rouge AB Autres :

Transformation : Pas de transformation Sur place En coopérative Autre :

Distribution : AMAP Points de vente collectifs Marchés de producteurs Magasins

Grossistes Vente à la ferme Foires/salons Autre :

EVOLUTION/PERSPECTIVES

15. Pouvez-vous me parler de l'évolution de votre exploitation ces dernières années ?

16. Quel avenir voyez-vous pour votre exploitation ? Projets futurs ? Besoins ? Enjeux ? Adaptation ?

17. Quelle place/rôle a selon vous l'agriculture sur le territoire ?

18. Selon vous, comment est perçue l'agriculture sur le territoire, et aussi plus généralement ?

PERCEPTION AGRICULTURE ET BIODIVERSITE

(Après avoir parlé de l'exploitation et de son fonctionnement, la replacer dans son contexte, à l'échelle du territoire)

19. On entend beaucoup parler de développement durable, comment définiriez-vous une agriculture durable ? Qu'est ce que ça représente pour vous ?

20. Et si je vous parle de biodiversité ? Qu'est ce que cela représente pour vous ?

21. Selon vous, la biodiversité est-elle menacée ? Observez-vous sur votre exploitation des changements ?

Menacée : OUI NON

Modifications de la biodiversité : OUI NON

Description :

22. Pouvez-vous me parler de pratiques qui, selon vous, favorisent la biodiversité ?

23. Que pensez-vous de la mise en place d'actions pour répondre à vos enjeux agricoles et favoriser le renforcement de la biodiversité au sein de votre exploitation ?

CONTRAINTE ATOUT MITIGE NEUTRE

Description :

PERCEPTION NATURA 2000 (10')

24. Pouvez-vous me dire ce que vous savez sur Natura 2000 et comment vous percevez cette démarche ?

Connaissance de **Natura 2000** ? OUI NON

Si oui, comment avez-vous connu la démarche ? Quel point de vue sur la démarche ?

25. Seriez-vous prêt à vous investir dans une démarche participative et collaborative proposée par la démarche Natura 2000 ?

OUI NON NEUTRE

Sous quelle forme ?

Quel en serait l'intérêt ? Economique/subventions Productivité Ethique

Culture/tradition Social Qualitatif Entretien des milieux Autre :

26. Avez-vous des attentes, besoins, projets, commentaires, ou autres à nous faire passer ?

TYPOLOGIE

ENJEUX

POTENTIEL

PERSPECTIVES

Appendix VI: Farmers Tables

TOWN	ISSAMOULENC					
FARMER	Bouillet	Creston	El Bezzazzi	Vialle J.F.	Vialle S.	Besson
AGE	about 30	46	about 60	50	about 50	about 30
ORIGIN	NEO	RURAL	NEO	RURAL	RURAL	RURAL
SYSTEM	Organic	Conventional	Integrated/Low-input	Conventional	Traditional	Conventional
PRODUCTION	Wild plants gatherer	Sheep (meat) and chestnuts	Sheep (meat)	Sheep (meat) and chestnuts	Sheep (meat) and chestnuts	Sheep and cows (meat), berries and wood
FARMING ACTIVITY	Main activity	Main activity	Main activity	Main activity	Main activity (reduced because of sickness)	Main activity
AGRICULTURAL TRAINING	Yes	Yes	Yes	Yes	No	Yes
MEMBERSHIP TO FARMERS ORGANIZATION		Yes	Yes	No	No	No
OTHER EXPERIENCES	Yes		Yes			
FARM SIZE		120 ha + 350 sheep	100 ha + 180 sheep	250 ha + 500 sheep	40 ha + 20 sheep	200 ha + 230 sheep + 5 cows
COMMERCIALIZATION	Wholesaler	Wholesaler	On-farm sale, wholesaler	Farmers co-op	Sheep-dealer	On-farm sale, sheep-dealer
PROCESSING	No	No	No	No	No	No

TOWN	<u>SAINT-MICHEL-DE-CHABRILLANOUX</u>				
FARMER	Dejours	Deluzet	Dewez	Becker	Lafaurie
AGE	> 60	about 30	about 30	about 30	about 60
ORIGIN	RURAL	NEO	NEO	NEO	RURAL
SYSTEM	Conventional	Organic	Organic	Organic	Traditional
PRODUCTION	Fruits	Vegetables, aromatics and chickens	Cereals, potatoes and chestnuts	Cows, sheep and pigs (meat), vegetables	Sheep and chestnuts
FARMING ACTIVITY	Small activity to supplement his retirement pension (former agricultural activity)	Main activity	Main activity	Main activity	Main activity
AGRICULTURAL TRAINING	Yes	Yes	Yes	Yes	No
FARMERS ORGANIZATION	No	No	No	Yes	No
OTHER EXPERIENCES		Yes	Yes	Yes	
FARM SIZE	14 ha (2,5 farmed)	5000 m ²	70 ha	20 ha + 7 cows, 3 sows, 2 horses, 5 sheep	25 ha + 50 sheep
COMMERCIALIZATION		Shops, on-farm sale, local restaurants	Shops, on-farm sale, local restaurants, farmers shop	Farmers shop (direct sales)	Farmers co-op
PROCESSING	No	No	Yes	Yes	No

TOWN	<u>CHALENCON</u>	<u>SAINT-JULIEN-LABROUSSE</u>
FARMER	Moins	Cherpe
AGE	about 30 and 60	40
ORIGIN	RURAL	RURAL
SYSTEM	Conventional	Organic
PRODUCTION	Sheep and cows (meat), oignons, potatoes, eggs and chestnuts	Cows (meat), vegetables and chestnuts
FARMING ACTIVITY	Main activity	Double employment (work in a wool co-op as well)
AGRICULTURAL TRAINING	Yes	Yes
FARMERS ORGANIZATION	Yes	No
OTHER EXPERIENCES		TRAVEL
FARM SIZE	100 ha + 220 sheep, 5 cows, chickens	12 ha + 4 cows
COMMERCIALIZATION	Farmers shop, farmers co-op	On-farm sale, farmers co-op
PROCESSING	No	No

TOWN	SAINT-ETIENNE-DE-SERRE								
FARMER	Arnaud	Bolomey	Bonnefoy	Cayrat	Dumousseau	Espinas	Rey	Rouveyrol	Voron
AGE	30	about 50	25	about 30	about 30 and 60	about 50	> 60	about 20 and 60	about 30
ORIGIN	RURAL	NEO	RURAL	RURAL	RURAL	NEO	RURAL	RURAL	NEO
SYSTEM	Conventional	Integrated/ Low-input	Conventional	Organic	Conventional	Organic	Tradtional	Conventional	Organic
PRODUCTION	Cows (meat), potatoes, chestnuts and wood	Cows (meat) and horses	Sheep (meat), chestnuts and berries	Formerly aromatics	Cows (milk and meat), chestnuts and cereals	Cows (meat), vegetables, fruits, chestnuts and guest house	Fruits and chestnuts	sheep (meat), potatoes and chestnuts	sheep (milk and meat), and chestnuts
FARMING ACTIVITY	Main activity	Hobby (butcher as main activity)	Double employment (work in a restaurant)	Former activity	Main activity	Main activity	Small activity to supplement pension	Main activity	Main activity
AGRICULTURAL TRAINING	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
MEMBERSHIP TO FARMERS ORGANIZATION	Yes	No	No		Yes	Yes	No	No	Yes
OTHER EXPERIENCES		Yes	Yes (part-time job)	TRAVEL		TRAVEL			TRAVEL
FARM SIZE	105 ha + 26 cows	20 ha + 14 cows	70 ha + 100 sheep		130 ha + 100 cows	60 ha + 16 cows	25 ha	130 ha + 500 sheep	100 ha + 50 sheep
COMMERCIALIZATION	Farmers co-op, local shop, on-farm sale, local restaurants	Local butcher's shop	Wholesaler		Wholesaler, farmers co-op, local shop, cow-dealer	Wholesaler, on-farm sale	Farmers market	Wholesaler, farmers co-op	Farmers shop, wholesaler
PROCESSING	Yes (slaughterhouse)	Yes (slaughterhouse and butchery)	No		No	Yes (little)	No	No	Yes

TOWN	SAINT-LAURENT-DU-PAPE						
FARMER	Cremillieux	Groll	Imbert	Laprat	Lheure	Maisonneuve	Mounier
AGE	> 60	56	about 50	about 60	about 50	about 30	about 40
ORIGIN	NEO	RURAL	RURAL	RURAL	RURAL	RURAL	RURAL
SYSTEM	Integrated/Low-input	Integrated/Low-input	Conventional	Organic	Intensive	Organic	Conventional
PRODUCTION	Goats (milk), sheep (meat) and wild plants gatherer	Sheep (meat)	Fruits	Fruits	Berries - hydroponics	Vegetables and gatherer	Vegetables
FARMING ACTIVITY	Main activity	Main activity	Main activity	Main activity	Main activity (+ cereal production in another region)	Main activity	Small activity to supplement a fruits and vegetables trader activity
AGRICULTURAL TRAINING	Yes	Yes	Yes	Yes	Yes	Yes	Yes
MEMBERSHIP TO FARMERS ORGANIZATION	No	Yes	Yes	Yes	Yes	No	No
OTHER EXPERIENCES	Yes	Shepherd for 20 years				TRAVEL	
FARM SIZE	170 ha (100 farmed) + 53 goats, 140 sheep	70 ha + 180 sheep	20 ha	25 ha	7 ha (2 farmed)	2 ha (2000 m ² farmed)	20 ha (12 farmed)
COMMERCIALIZATION	Farmers market, on-farm sale	On-farm sale	Farmers co-op, on-farm sale	Farmers shop, other shops	Wholesaler, local restaurants	Shops, on-farm sale	Wholesaler, shops, on-farm sale
PROCESSING	Yes	Yes	No	Yes	No	Yes (little)	No



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