Towards Thrifty and Self-sufficient Production Systems
Study on the training program "Building up and strengthening your thrifty and self-sufficient grazing system"

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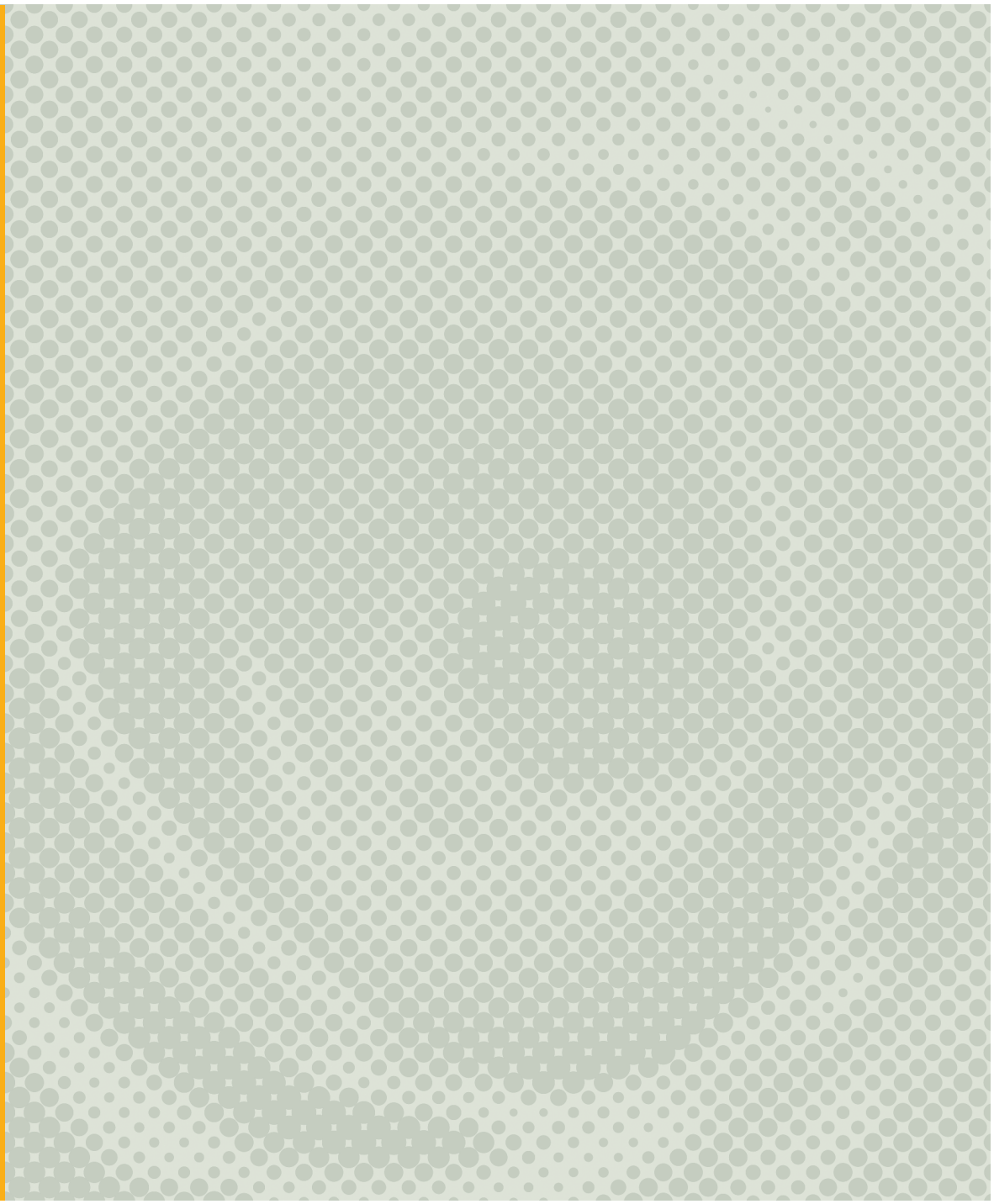

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Master thesis
4th Cohort (2010-2012)

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Léopoldine DESPREZ

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List of abbreviations

AEM	Agri-Environmental Measure
CAD	Sustainable Agriculture Contract (*Contrat d'Agriculture Durable*)
CIVAM	Initiative Center for the Development of Agriculture and Rural Areas (*Centre d'Initiative pour Valoriser l'Agriculture et le Milieu Rural*)
CIVAM DEFIS	Initiative Center for the Development of Agriculture and Rural Areas – Develpment in Favor of Integration and Solidarity (*Centre d'Initiative pour Valoriser l'Agriculture et le Milieu Rural – DEveloppement en Faveur de l'Insertion et la Solidarité*)
CTE	Farm Territory Contract (*Contrat Territorial d'Exploitation*)
CAP	Common Agricultural Policy
DC	Dairy Cow
ERG	English Rye Grass (*Lolium perenne*)
FdSO	Fodder Soil Occupation
FSA	Farming Surface Area
FSO	Farming Soil Occupation
GAB	Organic Farmers Association (*Groupement des Agriculteurs Biologiques*)
G	Grazers
GS	Grazing System
HG	High Grazers
I	Intermediates
INRA	National Institue of Agronomic Research (*Institut National de la Recherche Agronomique*)
LG	Low Grazers
PraiFace	Easing the evolution towards grazing systems (*FACiliter les Evolutions vers des systèmes Pâturants*)
RAD	Sustainable Agriculture Network (*Réseau d'Agriculture Durable*)
TF	Tall Fescue (*Festuca arundinacea*)
VLG	Very Low Grazers
WC	White Clover (*Trifolium repens*)

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Abstract

This study has been conducted within a farmers' association in Western France (Loire-Atlantique) promoting sustainable agriculture: the CIVAM DEFIS. The goal was to evaluate a two years training program by identifying the profiles of the farmers who enroll in it and how their systems have evolved. The targeted systems are dairy farms, cow/calf and sheep operations, main livestock farms found in this geographical area.

The program itself is being carried out with the objective of helping farmers to implement thrifty and self-sufficient grazing systems on their farms. The desired outcome of such systems is to obtain viable and more sustainable farms by decreasing expenses. This is done through the development of grazing proportion in the ration by a technique of rotational grazing in paddocks.

Semi-directive interviews were conducted with 22 former and current trainees. As a result of these discussions it was found that a majority of the farmers who enroll in the program came to refine their technique and develop the grazing part but were already farming with grass beforehand. This fact raises the question of why more intensive systems are not interested in grazing systems. It seems that livestock grazing is perceived as obsolete and that farmers are in some ways pressured into sticking to more "conventional" ways of farming.

As for the training program itself, it was found to be relatively efficient as 64% of the trainees have succeeded in evolving their systems towards more thrifty and self-sufficient ones. The remaining 36 % are farmers who had less grass-oriented systems at the enrollment time and for whom two years of training seems to be too short of a time to implement all the necessary changes both on their farms and in their way of thinking. Consequently suggestions of post-training coaching were made such as individual support or the creation of local groups. If those suggestions were to be applied they could improve the program's effectiveness into promoting thrifty and self-sufficient grazing systems as they are highly profitable on many levels. They are beneficial for farmers as individuals since they allow to improve both their income and working conditions. The entire society can also gain from them as they help to preserve farmers' sovereignty and to produce healthy food at a fairly good level of productivity per hectare while preserving the environment.

Introduction

A thrifty and self-sufficient grazing system is a production system that promotes:

- environmental protection, by decreasing inputs;
- respect to farmers, by favoring intellectual freedom;
- and economical viability of farms, through expense savings.

The CIVAM is a network of participatiing associations, and have been promoting those sustainable systems, through training programs, for many years now. Starting in the mid 90's, there were groups in training and key actors of grass production, such as André Pochon, were coming to present their research to the interested farmers. The training has been interrupted for a few years only to start again in 2005 in the context of the Agri-Environmental Measure 71.12 "implement a grass-based system in ruminants production respectful to the environmental challenges", so called measure 01.04. This measure had initially started in 2001 as a CTE to become a CAD a few months later. Consequently, in order to help the farmers to meet the demands of the 01.04 measure charter (cf. appendix 1), the CIVAM re-opened the training program with a first group starting in fall 2005.

Today, in 2012, a seventh group is currently being trained, raising the total number of people having followed the training program since 2005 to over 90. After all those years, the CIVAM whishes to evaluate the program's efficiency and to find potential ways of improvement in order to maintain a high quality service for farmers. This is the context of the present study.

Throughout the preparation work, key research questions have arisen and will be the guideline of this report:

1. Who enrolls in this program? What are the main profiles of the farmers who are being trained?
2. How do their systems evolve as a result of the program? : what are the main types of trajectories observed for those farmers' profiles?
3. Based on those trajectories types, to what extend is the training program efficient for implementing thrifty and self-sufficient grazing systems?
4. And finally, what could be implemented in terms of coaching to further support farmers towards such grazing systems?

1. Methodology

The methodology has been divided into four main steps, organized in a schedule presented in appendix 2 and described in the figure 1 below:

- set the study back in context;
- studying how the CIVAM lead towards economical and autonomous systems;
- determine the trainees' trajectory and profile;
- evaluation of the training program and coaching suggestions.

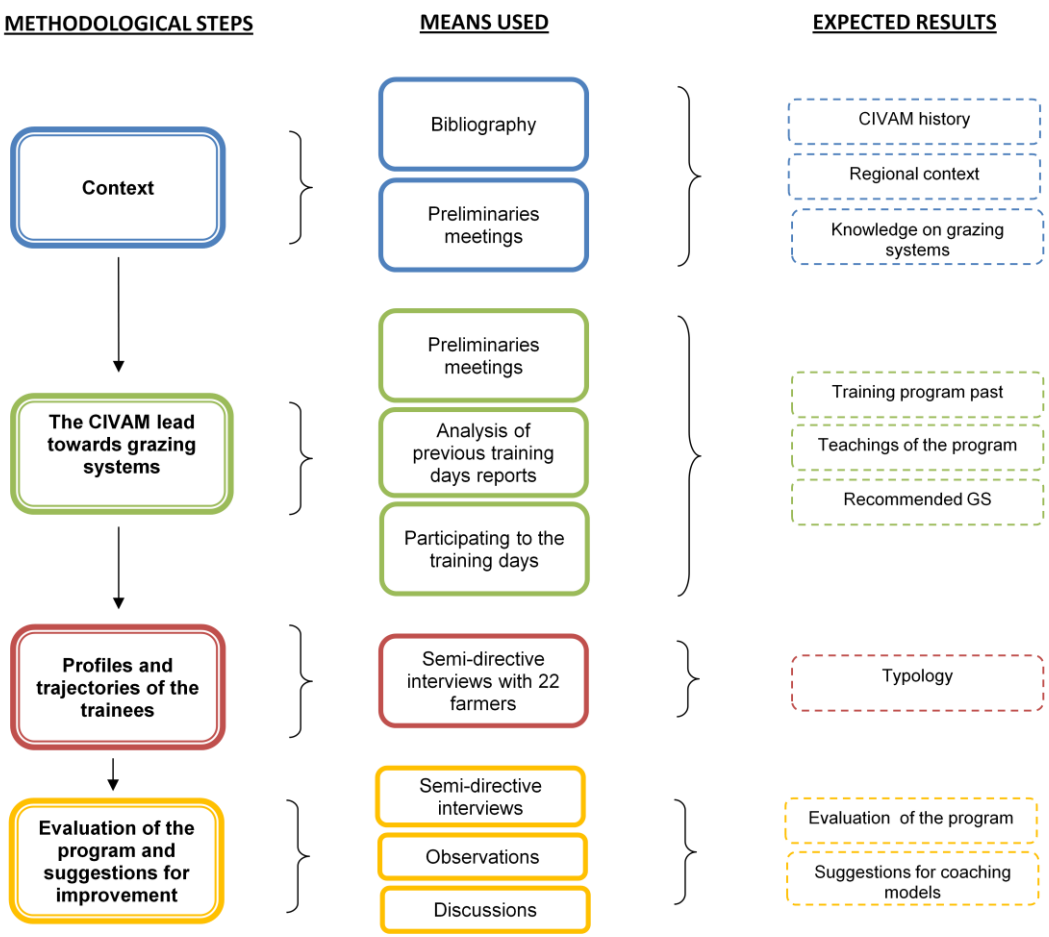


Figure 1: Chart of the methodological steps (*source: Desprez, 2012*)

1.1. The host organization: the CIVAM

1.1.1. An history linking education with agriculture

The CIVAMs, initiatives centers for the development of agriculture and rural areas, were created half a century ago. Originally, in the 1950s, it was an association between farmers and teachers who promoted progress and modernity in rural areas through farmer education. Later on, the CIVAMs progressively detached themselves from the teachers and focused mainly on promoting an alternative and sustainable agriculture different from the intensive type going on in the 1980s that was being approved by the mainstream politics and agricultural organizations at this time. Therefore the CIVAM opened up towards the organic, local products, green energy and even green tourism (*CIVAM, 2007*). They kept their educational tradition by offering many training programs to the farmers, such as the one further developed in the present report. Another important characteristic of the CIVAM is that it is also an association managed by the farmers and rural actors for the farmers and rural actors. "*Farmers and people living in the country must be the instigators and the architects of their own future. Instead of complying to the 'models' set from the outside, they become inventors, builders*" (*CIVAM, 2007*).

1.1.2. Values of diversity, sustainability and equality

The CIVAM network is really open and diverse, consequently common values are quite difficult to define. Some of them, however, can be highlighted:

- **Collective and diversity**: in order to maintain active territories and a dynamic agriculture, threatened by individualism, uniformity and productivism, it is important to encourage diversity and to maintain a collective spirit, since they both promote one another.
- **Sustainability**: promoting a sustainable production as well as a sustainable way of living for the actors of the territory through the development of local quality products, use of eco-materials for construction, efficient energy and water management, and so on.
- **Equality**: insure an equal chance for all and promote a spirit of solidarity by working on more satisfying solutions all together.

1.1.3. The CIVAM: a network

The CIVAM associations exist in 15 regions, especially localized in Western France, as shown by the red dots on figure 2. There are a total of 170 CIVAM groups all over France regrouping 15 000 members and employing 150 people (*www.civam.org*).

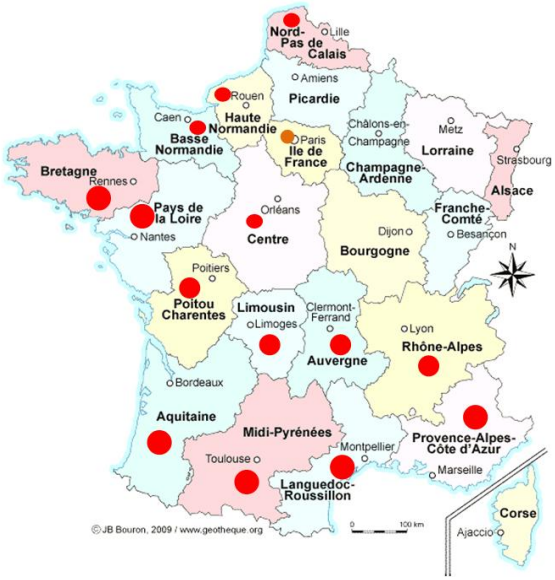


Figure 2: Localization of the CIVAM in France (*source: CIVAM, 2007*)

With the movement of decentralization in France, national and international subsidies do not necessarily go through the national group (FN CIVAM) but can directly be received by the FR (regional) and FD (departmental) CIVAM (cf. figure 3 below). Therefore, in 1994, the organization of the CIVAM groups switched from a hierarchical structure to a network one promoting a way to "*work by mutually enriching each other while keeping its own identity and freedom of action and trusting the other and the associates*" (*CIVAM, 2007*).

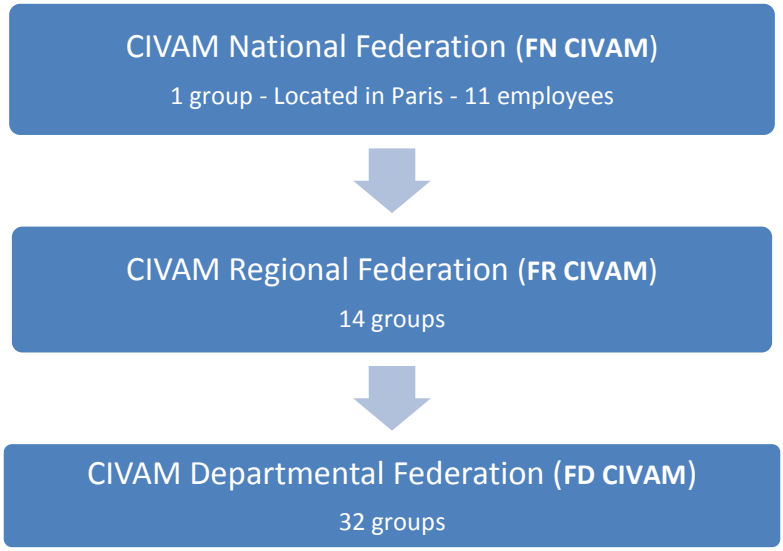


Figure 3: Flowchart of the three CIVAM levels (*source: civam.org*)

1.1.4. The CIVAM DEFIS: part of the CIVAM Loire-Atlantique

The present study was performed within a CIVAM association: the CIVAM DEFIS, DEFIS standing for DEvelopment in Favor of Insertion and Solidarity (original name: *DEveloppement en Faveur de l'Insertion et la Solidarité*). This association forms, with 4 others, the FD CIVAM Loire-Atlantique, as shown on the figure 4 below:

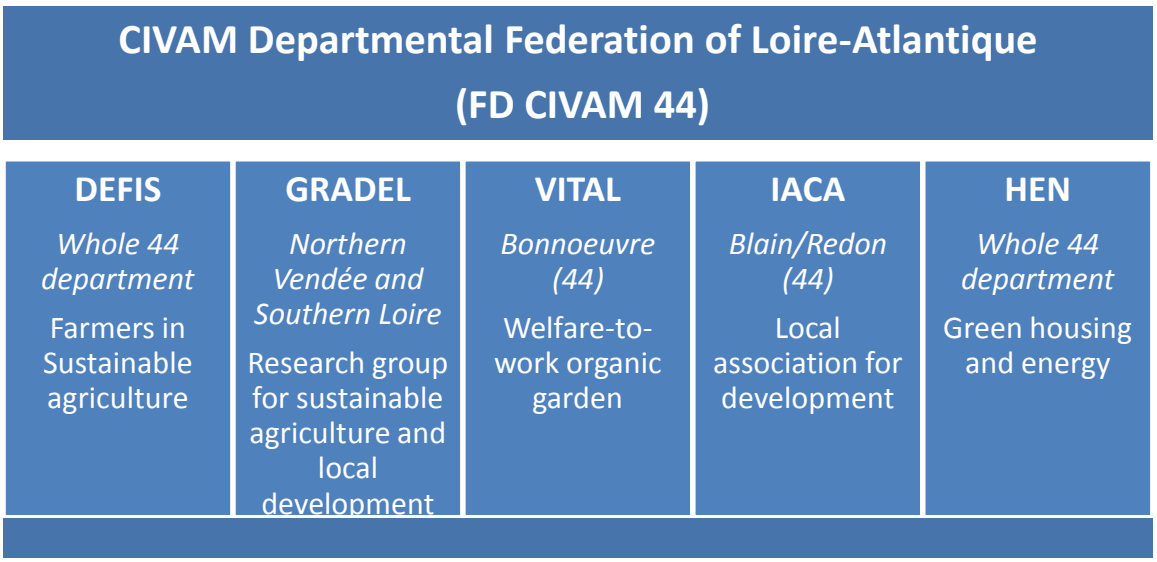


Figure 4: CIVAM Loire-Atlantique's network (*source: CIVAM 44*)

The CIVAM DEFIS is located in Saffré and operates all over the Loire-Atlantique department (cf. figure 5 for localization) and is managed conjointly by 7 employees and a board of 15 farmers. Together they cover various topics such as:

Figure 5: Localization of the FD CIVAM 44 (*source: Desprez, 2012*)

- Raising **awareness** as well as **developing sustainable agriculture** through training programs, measures that help reducing inputs at a farm level, ECOPHYTO 2018[1], diagnosis for energy savings and farm system evolution, technical-economical farm assessment;
- **Renewable energy**, such as wood from hedgerows: resource inventory, hedgerows perennial management;
- **Green building materials**: straw and hemp;
- **Reed-bed effluent treatment;**
- **Farm seed conservation**.

1.2. A local context favoring grazing systems

[1] Ecophyto 2018: initiative taken in 2008 by the Ministry of Agriculture, and supported by many national actors such as the Agricultural Chambers, other technical institutes, farmers, etc., following the Grenelle Environment. The goal, set for 2018, is to reduce the inputs, and especially pesticides, by 50% while maintaining a high production level quantitatively and qualitatively (*agriculture.gouv*).

The first step of the methodology consists of characterizing the regional situation in order to picture the training program in its context. This has been done through a bibliographical research as well as interviews conducted with key actors: administrators, and therefore farmers, and employees of the host organization. Four main points can justify of a positive context for grazing systems as well as for the training program itself.

1.2.1. Beneficial soils and climate favoring grass production

The department of Loire-Atlantique is especially well suited for the development of grazing systems thanks to its soils and climate. The area is located in an oceanic climate (cf. figure 6) and receive an annual mean of 800mm of precipitation falling all year around (*Météo Bretagne*), which allows, on an 'average' year, a regular grass growth throughout the year with two production peaks in spring and fall (cf. figure 7). Moreover, the departmental soil types do not allow high cereals yields (*Chambre d'Agriculture 44*): about 60 quintals for wheat as one local farmer was saying, when a highly productive region like the Beauce area (north-eastern France) can produce 90 quintals of wheat per hectare. The Loire-Atlantique region is therefore more profitable for grass production as it is less demanding.

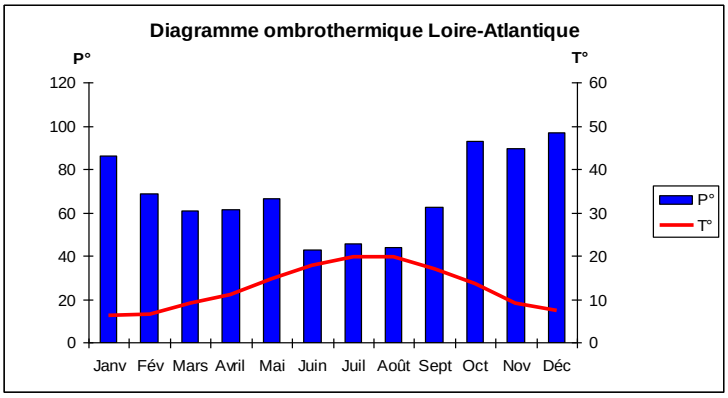


Figure 7: Ombrothermic diagram (*source: adapted from Météo Bretagne*)

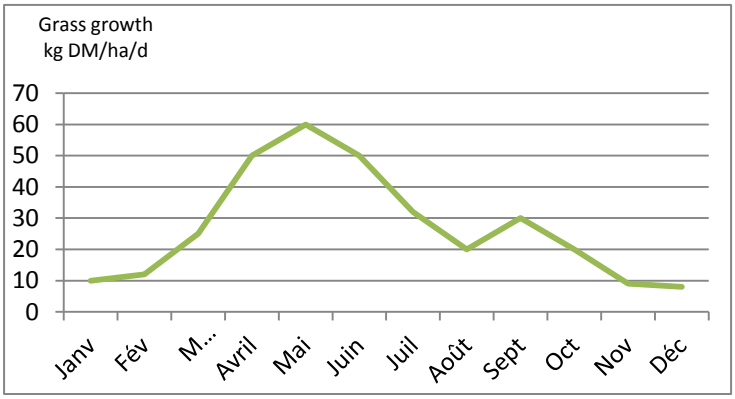


Figure 6: Grass growth trend on a year (*source: adapted from INRA*)

1.2.2. Loire-Atlantique: a land of dairy production

The Loire-Atlantique department is a land of extensive animal production, and especially dairy production, which means:

- The territory is mostly covered by grasslands,
- The mean farms' size is relatively small: 64 hectares in 2010 (*Agreste, 2011*),

- And the hedgerows network still exists. In some areas of France, especially the ones where crops are mainly grown, the hedgerows have been cut to let access to heavy machinery and to limit the decrease of production created by the trees. In areas of animal production, the hedgerows have been better preserved since it gives protection for the animals and it helped to maintain smaller fields that are easier for herd's management.

1.2.3. Loire-Atlantique: the largest French department for organic dairy agriculture

The Loire-Atlantique ranks as the second French department in terms of organic surface area and the first one in terms of organic dairy production (*Conseil Général de Loire-Atlantique*). This data is of importance since organic animal production usually goes along with grazing systems. This is confirmed by the fact that an important number of farms have converted into organic farming after the training program, once their grazing system implemented. When the farmers enroll in the training program only 23% of them usually farm organically while they represent 50% a few years after it.

1.2.4. A strong trade union influence

The area where the study was conducted has a unique trade union history and is well known in France for it. The *Confédération Paysanne*, an influential farming union promoting socialism and fighting against the industrial agricultural model, has managed the *Loire-Atlantique Chamber of Agriculture* until 2007. And even today, its influence remains strong within the department. This leads to a high spirit of solidarity among farmers and a strong tradition of meetings and exchanges within the profession. This could explain the fact that the training program has had such a high success rate and lasted so long.

1.3. The 'grass' training program: a method for thrifty and self-sufficent grazing system

This methodological step has been achieved through preliminary interviews with CIVAM administrators and employees, an analysis of the training days reports since 2005 as well as my presence at some of the training meetings.

1.3.1. The "grass" training program exists for many years

The training program, under its current outline, has existed since 2005 at the times when the so called 01.04 measure (cf. appendix 1) has been developed within the network. The training program, however, already existed under a different form since the 1995 when the

groups were smaller and the model that was taught was the "*Pochon method*". It was therefore better adapted to the climatic conditions of northern Brittany than the Loire-Atlantique ones. André Pochon recommends, in his model, to use only English Rye Grass (*Lolium perenne*) and White Clover (*Trifolium repens)* for pasture seeding. Both of those species do not tolerate dry climate and summer heat, which is perfect for northern Britanny where the climate is much wetter and colder than in Loire-Atlantique. The ideal growing temperature for English Rye Grass is between 15 and 20°C and it will stop growing if the weather exceeds 25°C, for instance. On another hand, the advantage of the clover is that it fixes nitrogen into the soil and, thanks to its umbrella shape, it shades the pasture in the summer allowing it to remain green longer.

Working on the measure 01.04 has therefore allowed to reshape this model in order to develop a grazing system that better fits the Loire-Atlantique climatic conditions. The CIVAM, with the help of their main trainer, Eric Favre, now recommend an association of three grass species (*CIVAM Haut Bocage, 2005*):

- English Rye Grass (*Lolium perenne*): as it was stated earlier, this specie is used to British type climate and thrive in wet climate with a low temperature, which is perfect for an early growth in the Loire-Atlantique pastures;
- White Clover (*Trifolium repens*): in addition to nitrogen fixation, the white clover is also very appetizing for the animals;
- Tall Fescue (*Festuca arundinacea*): this specie, with its deep roots, is more adapted to southern France and therefore warmer and dryer conditions. It helps to extend the growing season in the summer, when the ryegrass has stopped growing.

1.3.2. A program over two years…

Today's training program lasts two years, six days per year (cf. figure 8). The groups, of a medium size, are made of approximately 12 persons, and remain the same over the two years. The goal here is to create a positive group atmosphere, which is one of the key to success for an efficient training. First year's themes are compulsory since they are essentials in order to acquire the basics of the method. During the second year, however, the trainees have to decide as a group the themes they want to focus on. After the two training years, the farmers who want to keep learning and meeting have two choices:

- The whole group can continue for a third year together or,
- Individual farmers can join the already existing specialized groups made of former trainees. Those are the dairy, meat and sheep groups.

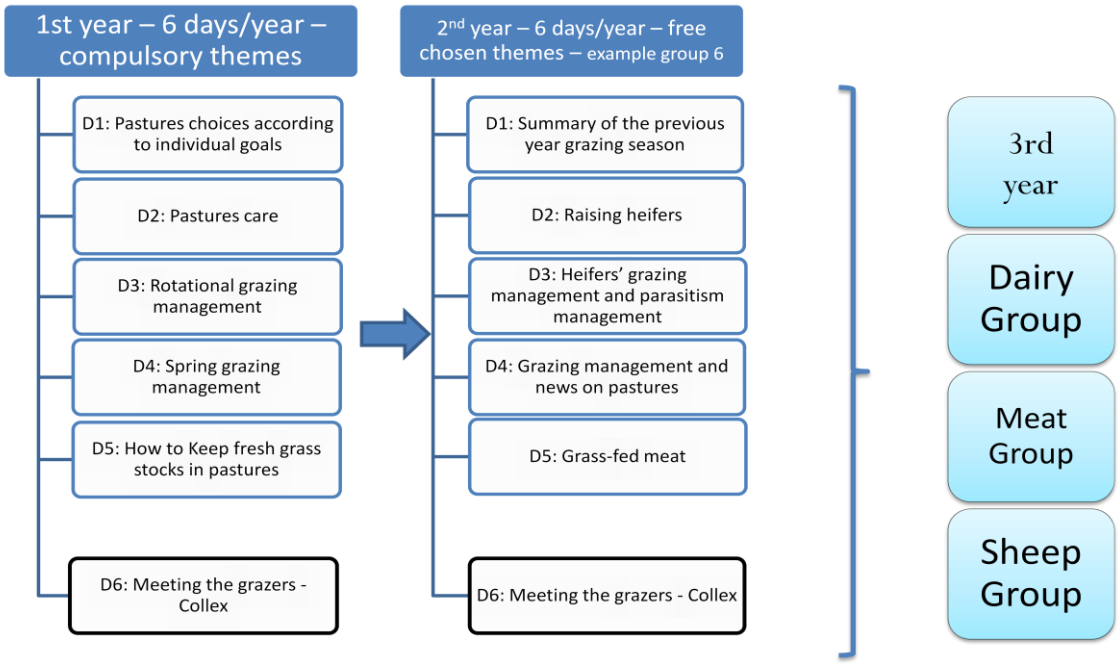


Figure 8: Schedule of the training days (*source: CIVAM 44*)

1.3.3. … in order to assert the basis of a method

The grazing system advocated in the training program is a technique of rotational grazing organized in paddocks sized according to the number of livestock heads to graze. The goal is therefore to switch the livestock from one paddock to another rapidly (under 6 days, before the regrowth), depending on grass height, in order to minimize the time that the livestock will spend in each paddock so it will not be overgrazed or trampled and grass growth will be enhanced.

The animals can enter the paddock when the grass height is between 18 to 20 centimeters for milking cows and 22 to 25 centimeters for mother cows[2]. They will then exit it when the grass has been uniformly grazed down to about 5 centimeters and when the grass rebuffs have started to be grazed on the top. About 20 centimeters of grass height is a good compromise between a plant that is nutritionally rich and a high productivity on the pasture. In fact, between the fourth and the sixth week of re-growth the quantity of grass is multiplied by four, as shown on figure 9, while still maintaining good nutritional values. So a 35 to 50 day interval between each grazing period, depending on the season, soil, climate

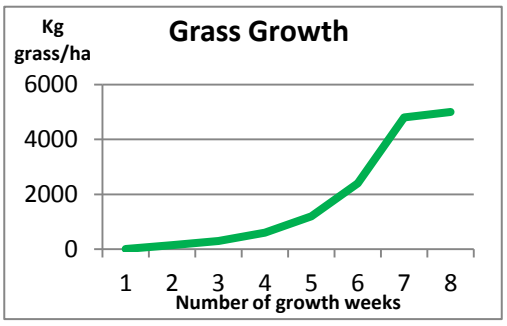


Figure 9: Grass re-growth trend line over 8 weeks (*source: Voisin*)

[2] The mother cows need to a thicker grass with more fiber in it, otherwise they seem to be losing weight (*E. Favre, farmer/program teacher*)

and grass species, allows the maintenance of high pasture productivity in spring and fall (*RAD & CIVAM, 2010*).

The paddocks' size fitted with the number of livestock heads allows a uniform grazing of the whole paddock as well as spare grass rebuffs. The pastures' productivity is therefore enhanced and fodder self-sufficiency more easily reached.

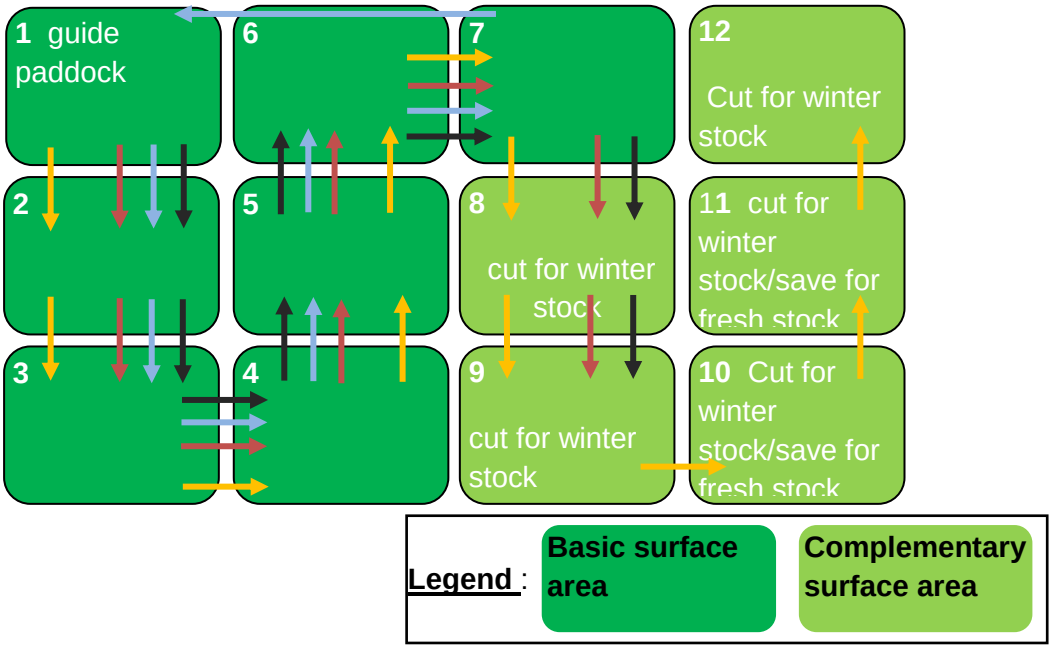
In order to illustrate this method (cf. figure 10), we can take the example of an average dairy farm of 60 milking cows. First of all, we are going to calculate the size of the basic surface area needed for grazing during the most productive times, mostly spring, according to the number of heads knowing that the adequate size for a uniform grazing is 25 acres per head and per day.

Therefore: 60 x 25 = 1500 → the size for the **basic surface** area will be **15 hectares**

We can then divide that area into 7 paddocks, for example, which will make **each paddock** with a surface area of: 15/7 = 2.14, which makes it approximately **2 hectares**.

To that basic surface area, a certain number of paddocks (complementary surface area) will be added and will be used for grazing during the less productive times that are late winter, summer and fall. During the most productive time (spring) and when the grass production exceeds the grazing amount needed to feed the herd, those complementary paddocks will be cut for winter stock. In this example, 5 complementary paddocks have been added but the more they are, the better it is since it will allow an extension of the grazing period.

Paddocks will be saved for winter stock when the grass height is above 25 to 30 centimeters. When reaching this height, there is poor nutritional value for the animals and a risk of wasting grass due to animal trampling. It is important, when feasible, to have all paddocks of a same size as well as homogeneous soil within each of them. This will help to spot the appropriate moment to "jump" a paddock when the grass height is too high or to slow down the rotation when the height is not high enough.



February: beginning of the grazing season: first rotation

All the paddocks are grazed short. Creation of different growth times between each of the paddocks.

April: 2nd rotation

Rotational grazing starts on the guide paddock when the grass height is between 18-20 cm (22-25 for mother cows). Once the basic surface area is grazed (dark green), the herd keeps rotating on the complementary paddocks (light green) and only come back to the 1st paddock (guide paddock) when the grass height is back to 18-20 cm.

May-June: 3rd and 4th rotations

Faster grass growth period (cf. Figure 6) and so the basic surface area paddocks are enough to feed the herd. The paddocks of the complementary surface area are kept for winter stock (hay, silage, etc.) and for summer grazing (save for fresh stock).

July-August: 5th rotation and following

In summer time, because of the heat and lack of rainfall, the grass growth slows down and complementary paddocks usually have to be included in the rotation again. The animals will then graze the grass that has been left in those paddocks from the spring growth (save for fresh stock). After the summer, there is a pick of grass production during the fall (cf. figure 6) and the rotational grazing can begin again, starting from paddock 1 when the grass height is correct.

Figure 10: Grazing season organized in paddocks (*source: RAD & CIVAM, 2010*)

In this method, the term « thrifty » is used because the goal is to lower down the expenses either due to fodder production, working time or mechanization. It is also important to be opportunistic and to turn the animals into the fields to graze whenever it is possible, even during winter time when both the climate and state of the soils allow it.

The second part, “self-sufficient”, means self-sufficiency in fodder as well as intellectual freedom for the farmer regarding the management of her/his farm.

A “thrifty and self-sufficient” system is therefore reached by optimizing the grazing part in the herd’s ration thanks to a better grass production and pasture management. A thrifty and self-sufficient grazing system can consequently either include both grazing and corn silage in the herd’s ration or be 100% grass based.

1.4. Semi-directive interviews for building up a typology

As Capillon explained in his thesis (1993), a typology allows the grouping of interviewed farms according to their strategy which can be based on system’s goals, production orientation, limits and advantages or farmer’s opinions on a specific system, which is, in our case study, grazing systems.

The interviews have three main goals:

- To find out **what the former participants** of the training program **have became**: *how did their farming system evolve? What is their opinion on the rotational grazing system now? Have they implemented it on their farm? Etc.*
- To determine their **trajectory** from the beginning of their career: *how was their farming system when they first started? How is it now? Did their grazing system evolve over the years? And what is the degree of influence of the training program on that trajectory?*
- From there build up a **typology**: *what are the main profiles of farmers and types of farming systems found in the training program?*

The various steps that led to the typology are summed up in figure 11 below. They will be further detailed in the following parts of the present report.

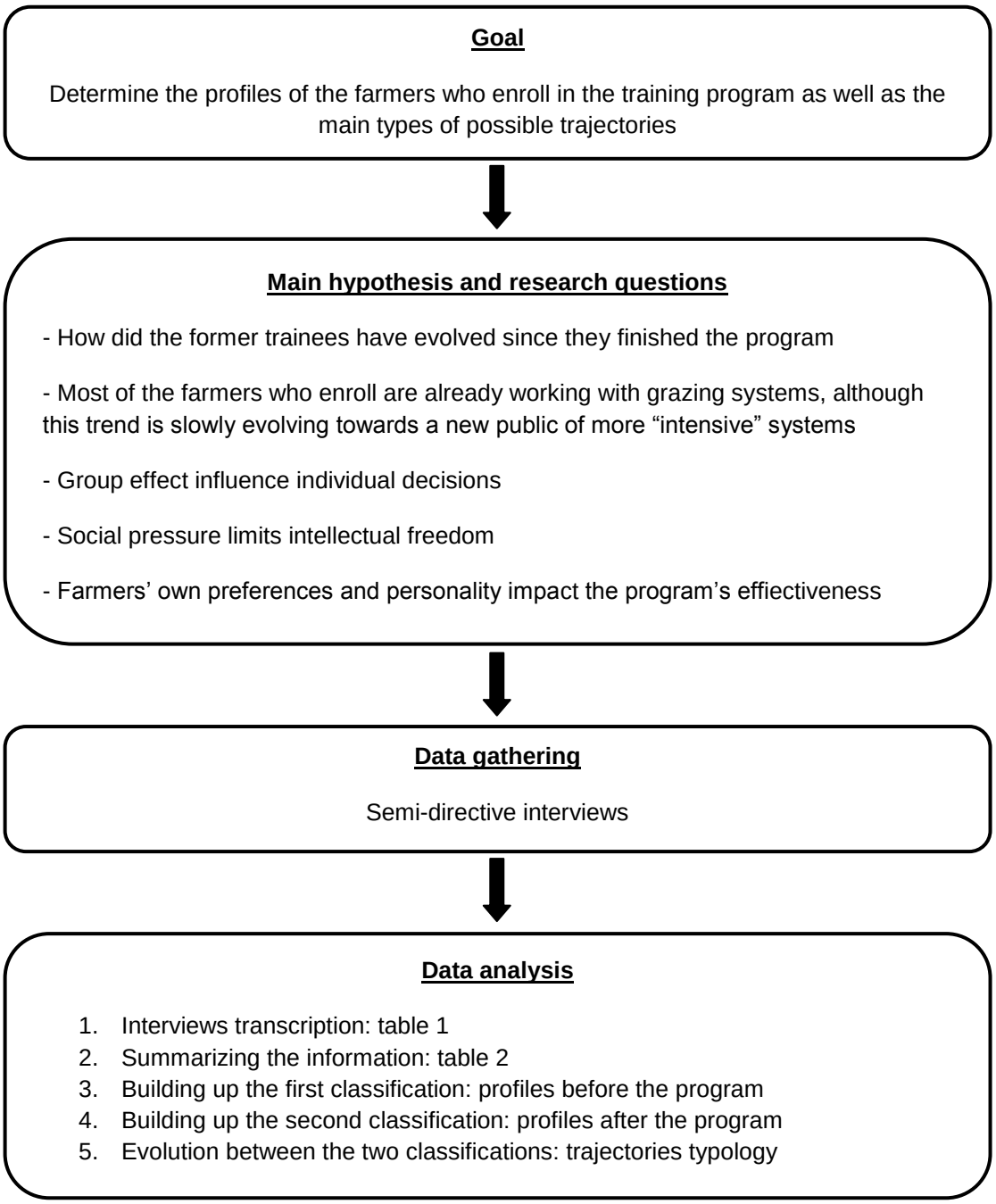


Figure 11: Steps leading to the typology (*source: adapted from Kling-Eveillard, et al., 2012*)

1.4.1. Survey Guide: gathering qualitative and quantitative data

1.4.1.1. Choosing the survey method

In order to be able to build up a typology, indicators must be determined. Those indicators should be quantitative, for measuring and comparing the degree of productivity for instance, as well as qualitative, for data such as the identification of the farmer’s state of mind and motivation for rotational grazing systems.

To achieve this goal, structured semi-directive interviews are the most effective. Their purpose is to make the interviewee feel comfortable enough so the person will talk freely (*Lefèvre*) and it will be easier to grasp the big picture and to discover what matters the most to the farmer. For instance, if the person interviewed talks about grazing system many times during the discussion it means that it is important to her/him. This type of interview is called "structured" because a survey guide is used to direct the interviewee thoughts in order to validate hypothesis and to answer questions that have arisen during the first part of the methodology.

Semi-directive interviews differ from questionnaires as they do not restrain the discussion to only certain themes but instead will focus on listening to the interviewee. Each interview is therefore unique and its outcome will depend on the person interviewed and on the interaction between the interviewer and the interviewee (*Kling-Eveillard et al., 2012*). This is why it is very important to be aware of our own attitude, as interviewer, during the discussion. We should be able to consent with the person talking while being careful not to influence him/her with our own comments and/or mimics. This is also why a survey guide is useful to direct the discussion and to gather enough data common to all interviewees in order to draw a comparison between them and to build the typology.

1.4.1.2. Building the survey guide

As was said before, the survey guide is only here to guide the discussion and to ensure that the hypotheses are validated and the study questions (cf. introduction 1.4.) answered.

The main hypotheses are:

- Redundant farmers' profile: most of the people enrolling in the training program are part of the CIVAM network and are already working with grass in their ration. They come to acquire a method and to improve their technique;
- Although, this is slowly changing over the years and more people who are now coming are not the usual CIVAM network's profile and have a more "intensive" farming system;
- How much does the group effect influence individual decisions: people tend to implement a lot during the two years of the training program but after that, and once they are on their own on their farm, they go back to their previous habits;
- The social pressure limits intellectual freedom: neighbors, family, sellers and technical advisors can pressure the farmers to stay locked into a "traditional" type of farming considered as safe;
- The farmer's own preferences and personality will influence a lot on whether or not a grazing system is successfully implemented.

The goal of the survey guide is therefore to translate those hypotheses and questioning into questions that could be easily understood by the interviewees. A few rules have to be followed when building up a survey guide such as: make the questions brief and clear, be careful not to include the answer in the question nor to influence the answer in any way, follow a logical order (*Revillard, 2006*).

For the present study, the survey guide (cf. Appendix 3) has been organized into six main parts, to which a sociological stub has been added:

1. **Presentation**: the aim of this part is to understand the **general context**: the evolution of the farm system over the years, does it tends toward a grazing system or not, understand what matters the most for the farmer interviewed and what are her/his goal concerning the farm.
2. **Grazing system**: **limits and advantages** of the implementation of a **grazing system**: what are the farmer's motivations for it, is the person influenced towards or against grazing systems, and is the farm's structure an advantage or not for a grazing system.
3. **System's sustainability**: **influence of the training program** for the improvement of the **farm's sustainability**: see if and how the farm is more sustainable and understand how the interviewee understands the concept of sustainability. It may be highlighted that the environmental issue has been left out in this part. This is because, on the first interviews, it has been found that the farmers either found it quite insulting or felt compelled to answer in a way to please the interviewer. Therefore the question was left out and if the farmer talked about it on her/his own, it was understood that the environmental side was of importance to them and vice versa.
4. **Training program**: **evaluation of the training program**: gather data on the trainees' opinion on the program and ideas for improvement.
5. **Summary and future projects**: **anticipation of future trajectory**: sum up the past trajectory and future projects.
6. **Quantitative data**: gather **quantitative data** about the **present farm situation**: quantitative data that can be easily compared between the interviewees such as the productivity, the surface area occupied by grassland versus cultures and so on.

Once the survey guide established, it was then tested on four persons with different systems ranging from very extensive to quite intensive: two who are still part of the CIVAM network and two who are not anymore. Adaptations to the survey guide have then been made according to those trials. It is true that, sometimes, a question that seem understandable

enough for the interviewer turns out to mean completely something else for the person interviewed.

1.4.2. Conducting the interviews in a way that will limit bias risks

1.4.2.1. Choosing the population sample

In order to limit survey bias as much as possible, it is important to pick a sample as much representative of the population as possible. As said before, the training program started in 2005 and since then it has trained more than 90 persons. Out of those the last group (7) that is still in training can be excluded, it then gives a total of 73 people interviewable. Those 73 people are divided into six categories according to a certain number of indicators which are summarized in the table 1 below:

Indicators	**Group 1**	**Group 2**	**Group 3**	**Group 4**	**Group 5**	**Group 6**[3]	**Comments**
Main production						NI[4]	Most (79%) of the systems are dairy farms, followed by suckling cows operations (16%) and a minority (4%) in sheep production
Productivity: mean litres of milk produced per dairy cow and per year (*L/DC/yr*)	< 5 000	5 000 – 6 000	6 000 – 7 000	7 000 – 8 000	> 8 000	NI	Most of the dairy farms of the CIVAM network have an average production under 7 000 L/DC/yr and the ones above that average rarely go above 8 000 L/DC/yr
% of grasslands in the soil occupation *(% grasslands/SO*)	> 85%	75 – 85%	65-75%	55-65%	< 55%	NI	Networks' farms are mostly covered in grasslands and only a few have less than 60% grasslands/SO
Organic/in conversion or conventional farming	Org	Org/Cion	Cion/Cal	Cal	Cal	NI	

Table 1: First classification for choosing the population sample (source: *Desprez, 2012*)

[3] The 6th group represents all the persons for who the data available was not enough to include them in one of the 5 groups. It concerns 16% of the population.
[4] No Information

From this table, between four and seven persons were chosen from each group depending on:

- their **main production**: it is important to have a sample of each of the three productions (dairy farms, cow/calf and sheep operations);
- the **year they followed the training program in**: it has been demonstrated that the influence of the group is very strong and so, in order to avoid that bias, it is important to interview people from each of the six groups;
- whether they are still **part of the CIVAM network** or not: the CIVAM being a very oriented association, only a certain type of profile is found in the network and it is very important to include every type of opinions in order to have a representative population sample.

Out of those 73 people 22 farmers were interviewed which represents 30% of the whole population. The interviews were conducted between early March and early May, as it is a time period when farmers are the less likely to be busy.

1.4.2.2. Conducting the interviews: giving the interviewee the opportunity to talk freely

The first contact was made by telephone and, before the interview, as little as possible was said concerning the survey so as not to influence the answers of the interviewees in any ways. Of course, a clear presentation of the interviewer and the reason why the interview is being conducted is necessary for being granted a meeting.

During the interviews, it is very important to listen to the person interviewed and encourage them develop their answers so the information will be as complete as possible. To achieve this, a few sentences such as “what do you mean by…”, “can you develop that?”, “for example?” can be used to feed the discussion. It is important to respect silences as they mean something too and to take notes on the attitude and mimics of the interviewee during the whole meeting as well as for each question individually when relevant (*Revillard, 2006*).

The interviews were all recorded after having interviewees’ agreement when they had the assurance that everything they will say would stay anonymous. Recording allowed listening fully to the person without being caught up in the note taking. The drawback of this technique is that the interviewees felt intimidated by the fact they were being recorded. It is also very time consuming at the interviews transcription stage. A few notes were also taken on the side for major information and unspoken ones (mimics, attitude, etc.).

The interviews lasted between one and two hours, depending on the person. When possible a tour of the farm was made after the interview. This was very helpful for understanding

some topics discussed during the interview as well as gathering more data. It was found that those tours were a good addition to the interview as the farmers usually felt more relaxed and at ease allowing a more flowing and freely discussion.

Once the interview over, first impressions about the way it went, specific attitudes and guesses about what profile the interviewee might be were right away written down (cf. appendix 4) and compared with the results later in the process. The goal of this step was also to write down everything that might not transpire in the answers, like unspoken data (attitudes, mimicks, etc.) and that may not be taken into account during the transcription.

1.4.3. Building the typology

Data analysis for establishing a typology consists of looking for different profiles of answers which would characterize a certain type of system.

Data analysis from open interviews is difficult as the method should be both rigorous and adaptable at the same time depending on the situation *(Kling-Eveillard et al., 2012).* Hence there is no unique method, but only many possibilities. The data analysis method describe below seemed to be therefore the better suited for this study.

1.4.3.1. Data transcription and choice of indicators for a first data analysis

The first step to build the typology was to **transcribe** all the data gathered during **the interviews** in a Excel table, called **table 1** (cf. appendix 5). This was done during the interview period so as to modify and improve the data analysis model as the first interviews went.

From this first table a certain number of indicators were chosen in order to build up a clear and **concise data table**, **table 2** (cf. appendix 6). This table also helped to highlight the farm system changes over time with the indicators in black for the period before the program and in blue for the period after. The indicators were chosen according to three main criteria:

- They had to be relevant and helpful for the next steps;
- They had to be the same for every interviewees, meaning that this particular data had to be present in each of the 22 interviews;
- They were the ones most often pointed out during the interviews.

Other indicators, such as the ration or goals at the settlement time were also used and saved for later in order to refine each type.

This table's goal was to summarize the interviewees' main thoughts, steps in their careers, attitudes, etc.

It was also used as a basis for building up the two classifications that are further developed in the following part of this document.

1.4.3.2. Two classifications…

The classifications were elaborated in order to categorize the main profiles of farmers enrolling in the training program. Those classifications were also a step to build the trajectories typology. This is why there are two of them: one for the profile of the trainees before the training program and the second one for the profile a few years after it.

As said before table 2 was used to build the classifications. Relevant indicators were chosen from this table: 6 common to both classifications and 9 extras for the classification after (cf. appendix 7 and 8). The difference between those indicators numbers can be explained by the fact that more data was gathered about the system after the program than how it was before. This is one of the methodology limit that will be further explained in part 1.6..

Five colors symbolizing the five levels of grass-oriented systems were then applied to each of the indicators (cf. table 2). For example the indicator "proportion of grassland in the farming soil occupation" was filled up as follow:

% grassland in the farming soil occupation	**> 85%**
	85 - 75
	75 - 65
	< 65%

The dark green color being the most grass-oriented and then this orientation progressively decreases until reaching the color red which represents the lowest grass-orientation.

A number, as shown on the table 2 below, was then attributed to each color in order to even out all the indicators and limit some very discriminatory factors.

Very grass-oriented	3
Grass-oriented	2
Medium	1
Little grass-oriented	-2
Very little grass-oriented	-3

Table 2: Five levels of grass-oriented systems (*source: Desprez, 2012*)

For some indicators, such as "organic system", colors were also use to play on this discriminatory factor:

Organic System	Yes
	In conversion
	No

Shifting to an organic system is entirely the farmer's choice and it is not a sure indication on how intensive the system is. Most of the organic systems however are very grass-oriented, as said before, and this is the reason why it is in dark green (3 points) here when the conventional systems are only in yellow (1 point) and not in red (-3 points).

For each interviewee, crosses were all added up and associated points were calculated on the same total (6) for both classifications in order to compare the two classes. The final numbers thus obtained were used to draw the different classes.

But first of all, let us illustrate this with one of the interviewees' answers regarding the classification after program. After filling up the data analysis table (cf. annex 8) each answer (cross) is added up for each color as shown in the table below. The total number of crosses thus obtained amounts to 17. As this total number can vary between each interviewee as well as between both classifications (6 indicators vs. 15) it is put back on a total of 6. The last step consists of multiplying those numbers (middle lane below) with the associated points for each color. The final number thus obtained - 7.3 - is the one used to draw the different classes, as shown on the graphs 12 and 13 below.

Total number of crosses	Put back on a total of 6	x associated points
3	(3x6)/17 = 1.1	1.1 x 3 = 3.3
6	(6x6)/17 = 2.1	2.1 x 2 = 4.2
5	(5x6)/17 = 1.8	1.8 x 1 = 1.8
3	(3x6)/17 = 1	1 x (-2) = -2
0	(0x6)/17 = 0	0 x (-3) = 0
= 17	= 6	= **7.3**

Table 3: Example of the math used for calculating the final numbers preceding classes elaboration (*source: Desprez, 2012*).

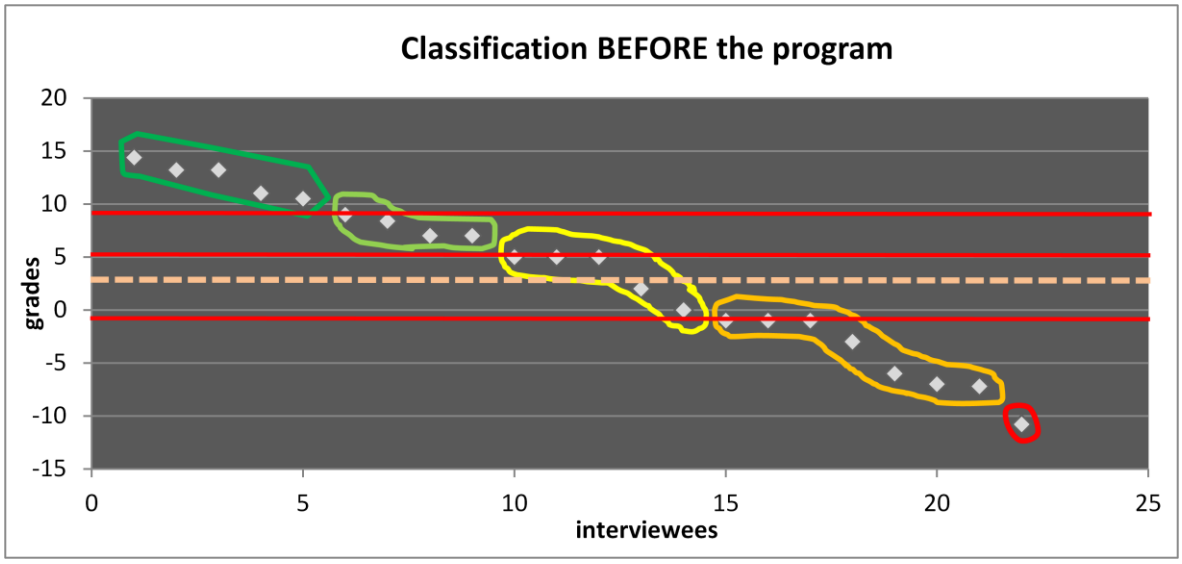


Figure 12: The 5 classes before the program (*source: Desprez, 2012*)

Figure 12 and 13 illustrate the process through which classes have been defined. As explained above all the numbers from the associated points were put in to a table (cf. table 3), and classes' limits were mostly drawn from the quartiles (red line on the graphs).

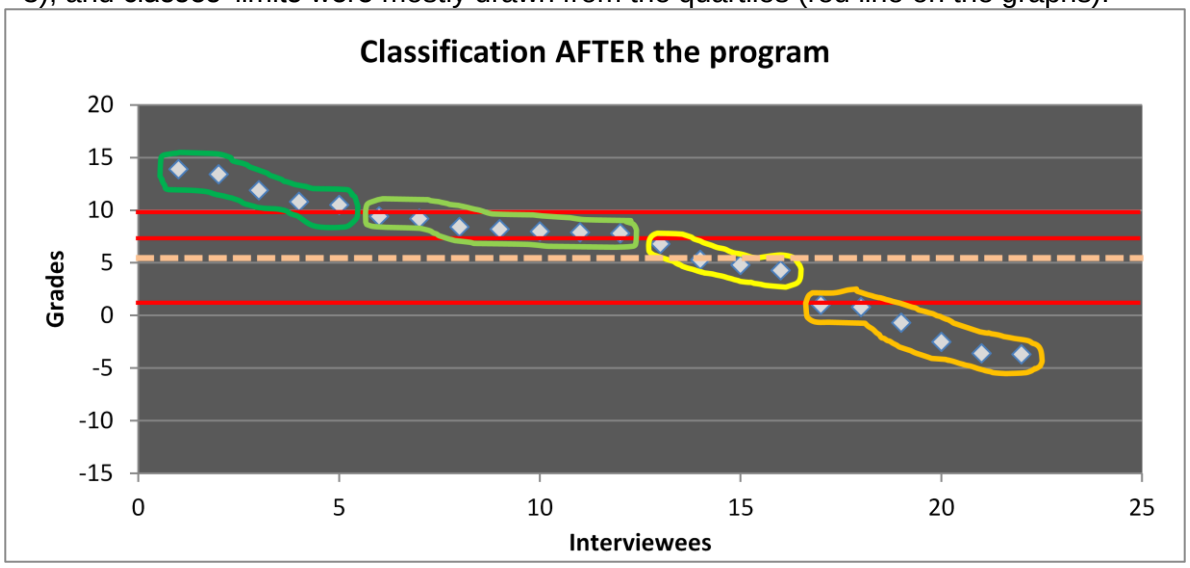


Figure 13: The 4 classes after the program (*source: Desprez, 2012*)

The goal for also representing each interviewee (dots) on the two graphs above was to observe by eyes their grouping pattern and see if different classes would automatically show before being defined by the statistical analysis. The two methods (statistics and graphs observation) were then combined in order to obtain various classes as representatives of the reality as possible. This is the reason why a fifth class was drawn for the classification before program since the last dot (cf. figure 12) was well below the others and so it was important to highlight the gap between the system of that particular interviewee and the ones from class four (in orange).

Before the program			After the program	
P.H.	14.4		V.R.	13.9
F.G.	13.2		P.H.	13.4
S.M.	13.2		G.V.	11.9
D.K.	11		F.G.	10.8
A.C.	10.5		O.B	10.5
A.R.	9		B.C.	9.4
V.R.	8.4		A.C.	9.2
C.Q.	7		G.M.	8.4
B.C.	7		N.B.	8.2
G.V.	5		D.K.	8
B.D.	5		B.D.	7.9
G.M.	5		D.D.	7.8
O.B.	2		V.G.	6.8
M.D.	0		S.M.	5.3
J.B.	-1		J.B.	4.8
N.B.	-1		A.R.	4.3
D.D.	-1		J.P.	1
V.G.	-3		C.Q.	0.8
P.M.	-6		P.L.	- 0.7
P.L.	-7		M.D.	- 2.5
J.P.	-7.2		P.M.	- 3.6
S.M.	-10.8		S.M.	- 3.7
Average	**3.35**		**Average**	**5.99**
Quartile 1	**-1**		**Quartile 1**	**1.82**
Quartile 2	**5**		**Quartile 2**	**7.85**
Quartile 3	**8.85**		**Quartile 3**	**9.35**

Table 4: Statistics for building up the different classes (*Source: Desprez, 2012*)

1.4.3.3. …leading to a typology of the main trajectories

The last part of the methodology was to define main types of possible trajectories for the farmers who participated in the training program. This was based on the two previously elaborated classifications. For each interviewee a comparison was made between her/his profile before the program and what it had became after it. A sample of this process is illustrated on the figure 14 below. Out of the 22 possibilities, major trends were easily observed. For instance systems which were not especially grass-oriented before the program

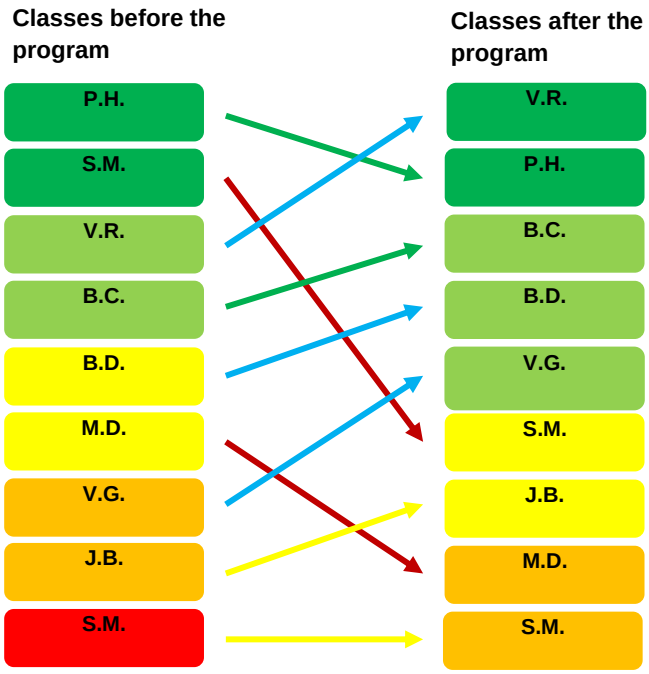


Figure 14: Different trajectories types (*source: Desprez, 2012*)

and that turned out to have a fully implemented grazing system a few years after it (blue arrow on figure 14).

A specific color was then attributed to each of those trends. The few isolated cases were looked closely at for understanding to reasons behind the evolution. It showed that they could be connected to the major trends, which were then narrowed down to only four by grouping similar evolutions.

The details concerning those four trends are developed and explained in the "results" part of this report.

1.5. Combining data to evaluate the training program and to suggest improvements

For this step of the methodology all the data previously gathered was combined in order to evaluate the training program. As the Scientific Council of Evaluation explain in their document "Petit Guide" (1992), evaluating a program imply to gather and to analyze data on the action itself (what happened?), to ponder about norms (was it done the right way?), and to think about the instruments used (how to do better?). The typology will therefore be looked at in order to measure the efficiency of the program for each profile and type. Ideas for improvement will be discussed later on in this document.

1.5.1. Evaluation of the program according to its goals

It is useful to evaluate the program in order to measure its real efficiency on the farms and therefore its profitability. The evaluation itself can be conducted on three levels (*Gerard, 2003*):

- **Learning evaluation**, meaning: have the trainees learned anything?
- **Transfer evaluation**: is that learning applied in the field?
- **Impact evaluation**, very much like the transfer evaluation in our case study: does the actions in the field help reach the original goal of the training program?

In order to complete this evaluation the priority is therefore to define the goals: the program's ones in the first place, but also the trainees'.

The program's original goal is part of the more general context of promoting sustainable agriculture. In concrete terms, it is to help farmers reach a thrifty and self-sufficient system through grazing systems. Grazing is therefore only a way to reach that goal, and not the goal in itself.

As far as the trainees' goals are concerned, they are harder to define as they differ from one person to another. Consequently, as it is an individual matter and because there is only little data on the topic, the present evaluation will only be conducted from the CIVAM's point of view and not from the trainees'.

The various criteria used to evaluate the program's efficiency are presented in the figure 15 below.

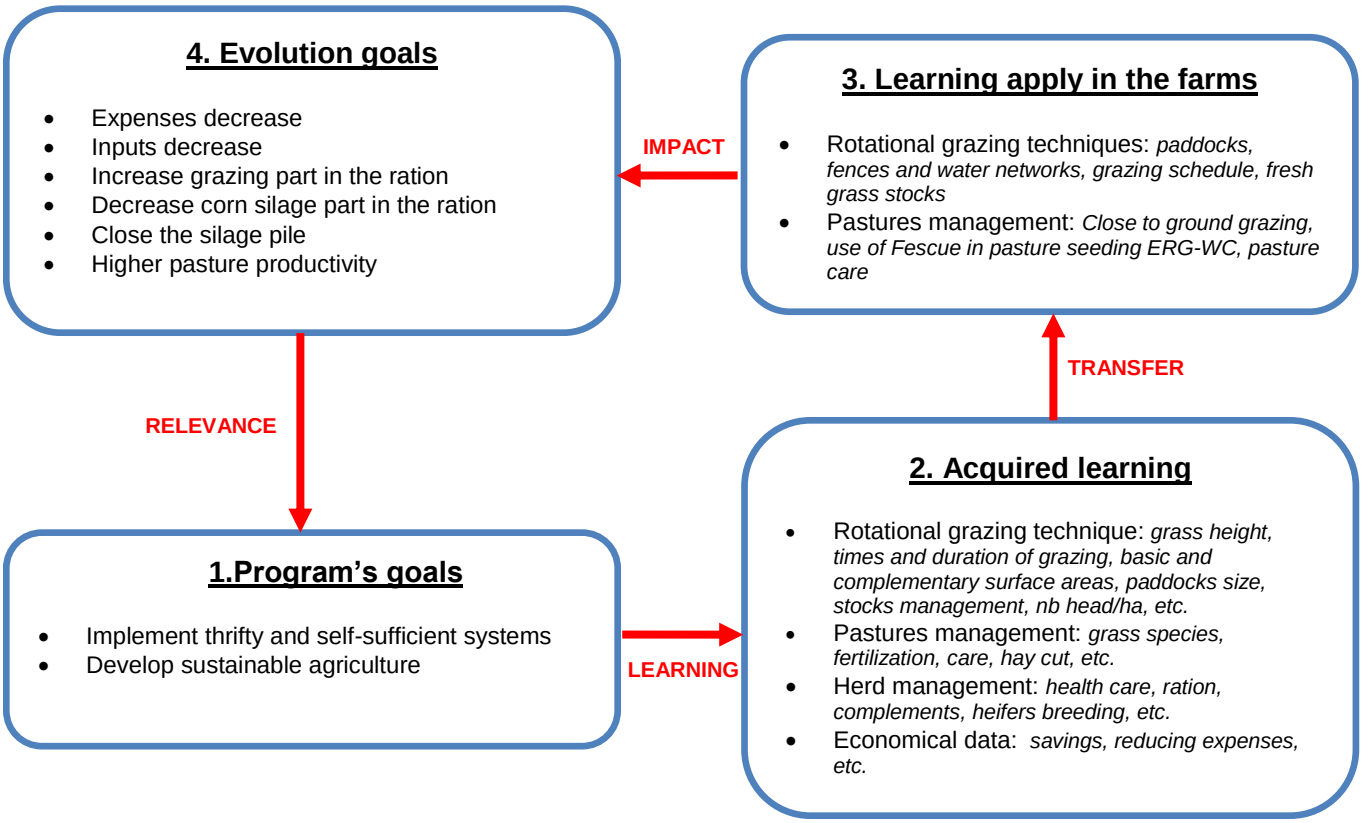


Figure 15: Program's evaluation steps (*source: adapted from Gerard, 2003*)

The program's efficiency is verified whether its goal; developing sustainable agriculture by implementing thrifty and self-sufficient grazing systems; is reached or not. The program's success (evolution goals) will therefore depends on:

- the program goals' relevance;

- the academic quality of the training, leading to a successful learning of the teachings;
- the coaching efficiency for implementing the learning, meaning that what was learned during the training will be put into action on the farms.

Those three levels (learning, transfer and impact) are therefore closely linked: the impact will only be positive if the trainees transfer on their farms what they have learned during the training, and they will do so only if they have successfully learned the teachings. This logic, however, works only in a one way direction because the trainees might very well have successfully learned the teachings but if they do not implement them on their farms, the program will have no positive impact.

1.5.2. Coaching suggestions: summing up the needs and ideas from all

In order to offer an optimum support to anyone who need it, the coaching suggestions are a mix of what was said during the training days, interviews, the public meeting presenting the results[5], the author's own observations and the trainees' and CIVAM employees' comments. The purpose of the coaching is to offer a technical as well as a moral support to farmers who express a need for it.

1.6. Methodology limits

This methodological process was elaborated in order to meet a demand formulated by the host organization: the CIVAM DEFIS. The process was not straightforward and the method of trial and errors led to a certain amount of methodological limits that need to be taken into consideration in order to temper the results thus obtained. The main limits are coming from the survey method on the first hand, and from the data analysis on the second hand.

1.6.1. Semi-directive interviews: the art of staying neutral

According to Kling-Eveillard et al. (2012) in their book on *qualitative surveys in agriculture* four main types of bias are commonly found in semi-directive interviews:

- An **atmosphere of wariness** during the interview that limits the information given to the interviewer. The interviewee always feels questioned by the interviewer and it is

[5] A public meeting was organized on July 9th 2012 in order to present the results of the study. The CIVAM being a participative association, it was extremely important to include the comments and suggestions on those results of the program's actors (trainees, interviewees and everyone else interested in it).

therefore very important to instate an atmosphere of trust and this from the very beginning of the interview.

- The interviewee **reacts** differently **depending on who is asking the questions**. In our case study the interviewer is a young woman, a trainee herself, and so the presentation at the beginning of the interview was very important in order to let the interviewee know that the interviewer was aware of the context and would understand the farmer's concerns.
- **Risk of suggesting the answers**: during the interview the interviewer should encourage the person interviewed to talk freely while being very careful to stay neutral so as not to influence the farmer one way or another.
- **Being influenced at the transcription stage:** Staying neutral is also very important when the interview is done and when it is time to transcript what have been said. It is easy to let oneself be influenced by the personality of some interviewee or by the interviewer's own opinions. It is therefore very important to preserve the interviewee's point of view.

Even when aware of those risks of bias and therefore trying to limit them, they may still slightly influence the results.

1.6.2. Data analysis risk of error: learning from experience

A very important step when conducting semi-directive interviews is to anticipate the data analysis step when building up the survey guide. To determine exactly what data is needed and how to use it should be clearly defined in order to know what questions to ask.

In the present study, this step has been done but the data analysis table built beforehand was not the final version. This led to a late realization that it could have been interesting to have more data on some specific topics, such as how the systems were before the program (cf. part 1.4.3.2.).

This limit did not have a considerable impact on the results but it is a lesson to be learned for the future.

2. Results: a typology allowing an effective training program's evaluation and a coaching suited for all

2.1. Typology: mostly grazers but a trend in evolution

2.1.1. Five representative classes

The five classes, which are the five main farmers' profiles, on which both of the classifications and the typology (describe later) depend are depicted in the figure 16 below. Those classes range from the High Grazers to the Very Low Grazers and are classified this way depending on how far the thrifty and self-sufficient grazing system has been pushed.

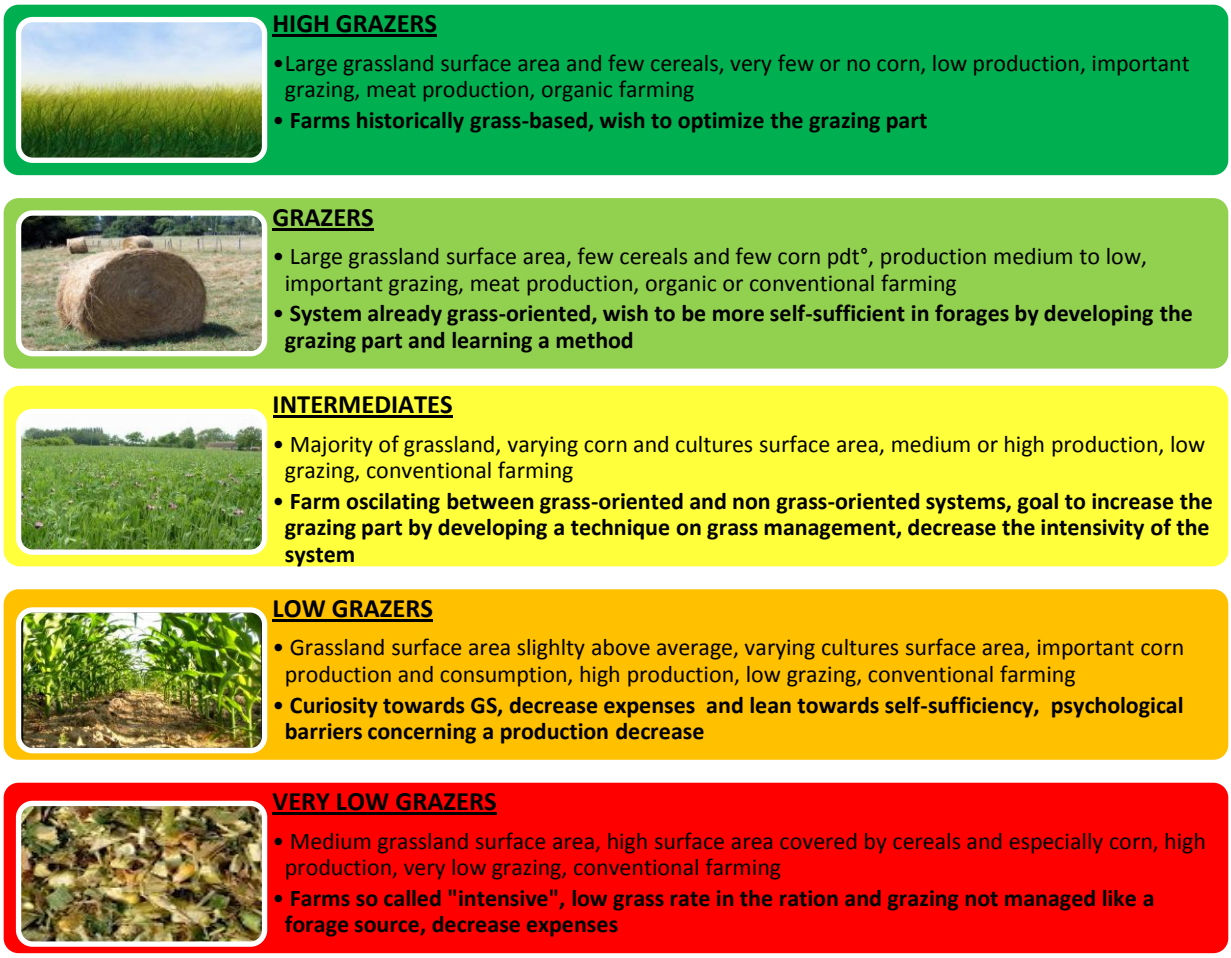


Figure 16: Five main profiles (*source: Desprez, 2012*)

The technical features of each of those five classes are listed in the table in annex 9 and are represented in the figure 17 below.

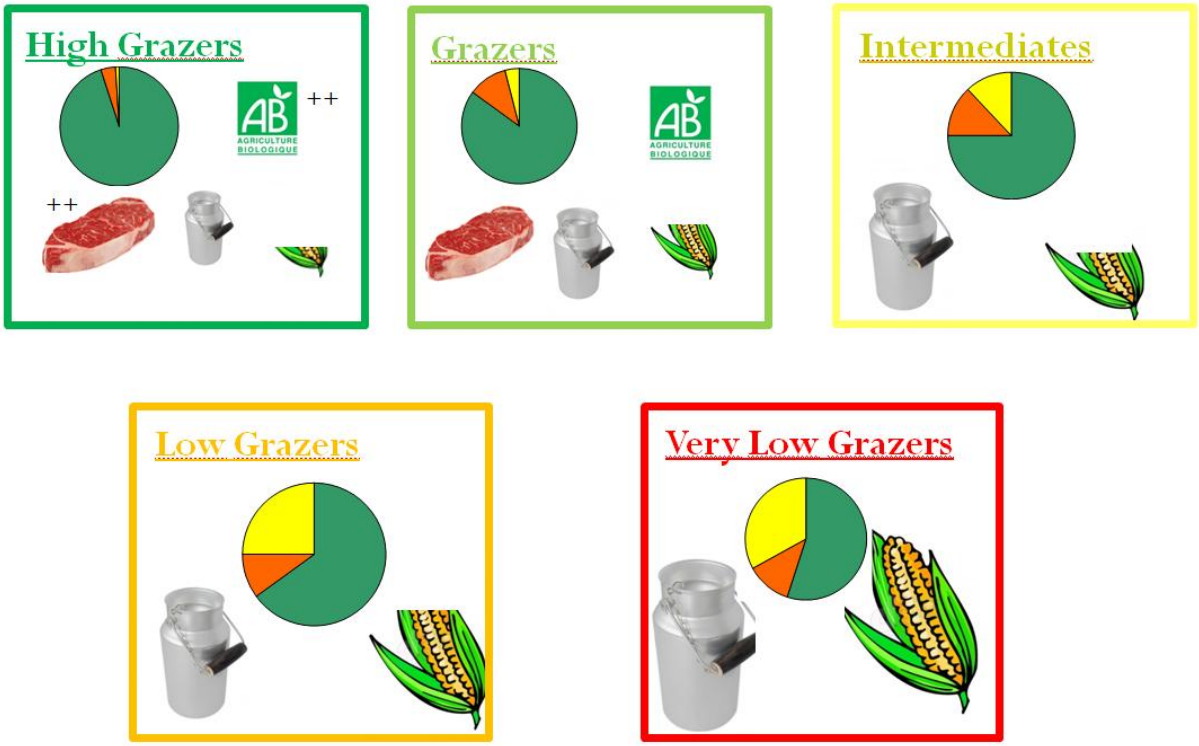


Figure 17: The 5 profiles simplified (*source: Desprez, 2012*)

- The **pie** figures illustrate the soil occupation of each class with the proportion of grassland in dark green, the corn in yellow and the other fodder crops in orange. It can be seen on those pies that the less the system is grass-based the bigger the surface area occupied by cultures to the detriment of grassland.
- The logo **AB** stands for the Organic Farming systems that are mostly found in the profiles High Grazers and Grazers.
- The **slice of meat** symbolizes beef operations that are also mostly found in the two profiles representing the most grass-based systems.
- The **milk can** illustrates the mean production which is higher for the systems that are the less grass-based.
- The **corn cob** represents the corn silage pile. The cob size symbolizes the proportion of corn silage in the herd's ration and shows that it is higher for the two classes Low Grazers and Very Low Grazers. The fact that the cob is more or less hidden symbolizes the time during which the silage pile is closed. It can be several months for the most grass-based systems while it can never be closed for the category of the Very Low Grazers.

2.1.2. The systems are more grass-oriented thanks to the program

Both of the classifications, who led to the typology, were built in order to take into account the profile of the trainee before and after the training program and from there to estimate the trajectory of each of the trainees and to assess the extend to which the program had influenced it.

The figure 18 shows that as a general trend the **systems are more grass-oriented after the program than they were before**. The pie on the left hand side illustrates the proportion of each profile before the program, while the pie on the right hand side shows that same proportion after the program. On the left figure the profiles VLG, LG and I, which are the less grass-based systems, represents 59% of the total while those same profiles are only 45% after the program. And vice versa for the profiles HG and G which are the most grass-based profiles. Those pies therefore show that most of the farmers expand their grazing part thanks to the training program.

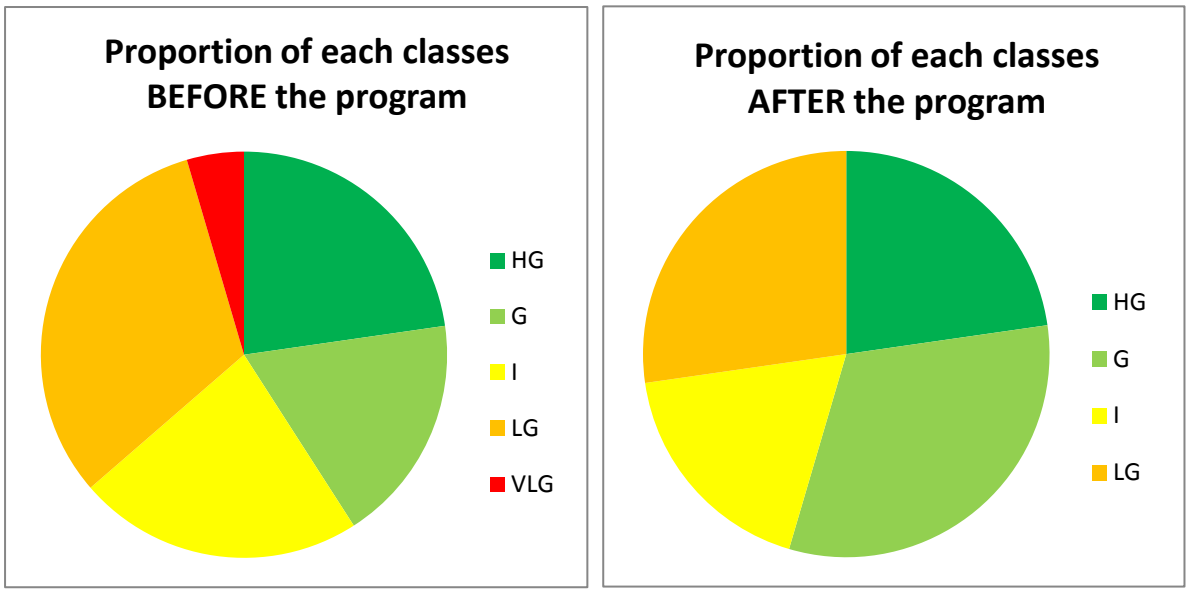


Figure 18: Proportion of each class before and after the program (*source: Desprez, 2012*)

It should be stated that the profile VLG is no longer represented after the program. This can be explain either by the fact that this profile's trainees have oriented their system towards more grazing and are now part of the other profiles, or by the fact that they resigned from the program after the first year because it did not suit them. Even though this last case is a minority it is interesting to reflect on

- Ways to further interest this type of profile into grazing systems;
- How to adapt the training program in order to catch this profile?
- Coaching methods for this profile. This last part will be further developed in part 2.3.3. of the present report.

Figure 19 and 20 below give a concrete example of changes that can be observed on a farm when a system evolves towards more grazing. Those graphs illustrate changes within a herd's ration after a system's "classical" evolution towards more grazing, meaning that this particular farmer, as it is the most common case, started the program with a system classified as Low Grazer and made the evolutions towards a profile of Grazer, therefore increasing grazing to the detriment of corn silage.

Figure 19 represents the ration before the training program. It can be seen that the spring grazing, in dark green, was already well developed and the silage pile was closed for almost two months straight. The corn part (in yellow), however, is above 70% of the total winter ration. This important proportion implies that an important amount of soya, which is most commonly imported across sea from South America, is used in order to balance the ration. It also implies an important amount of time and money are being spent to grow the corn[6]. All of these factors tend to decrease the system's sustainability. The light green color represents the other grass-based fodder such as hay, haylage or grass silage that are mostly distributed in summer time and take up 30% of the winter ration.

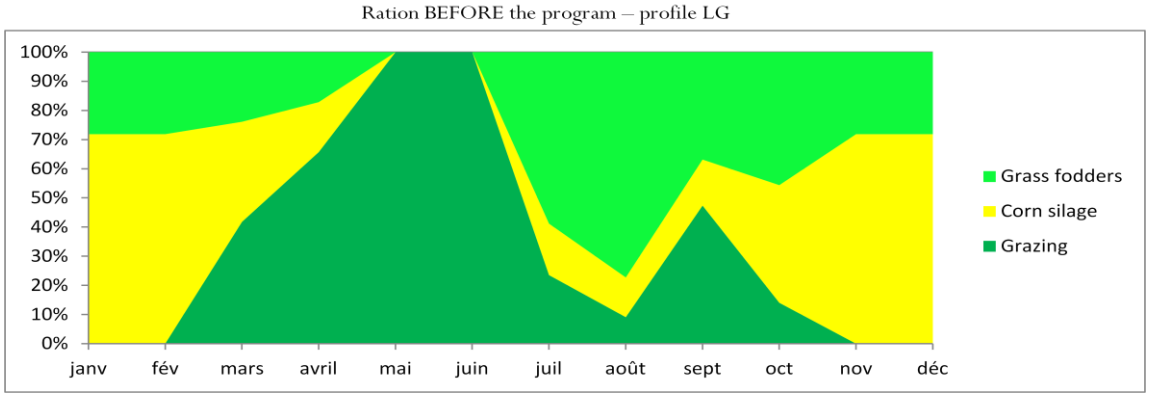


Figure 19: Ration's profile before the program (*source: Desprez, 2012*)

Figure 20 illustrates the same farm's ration a few years after the training program.

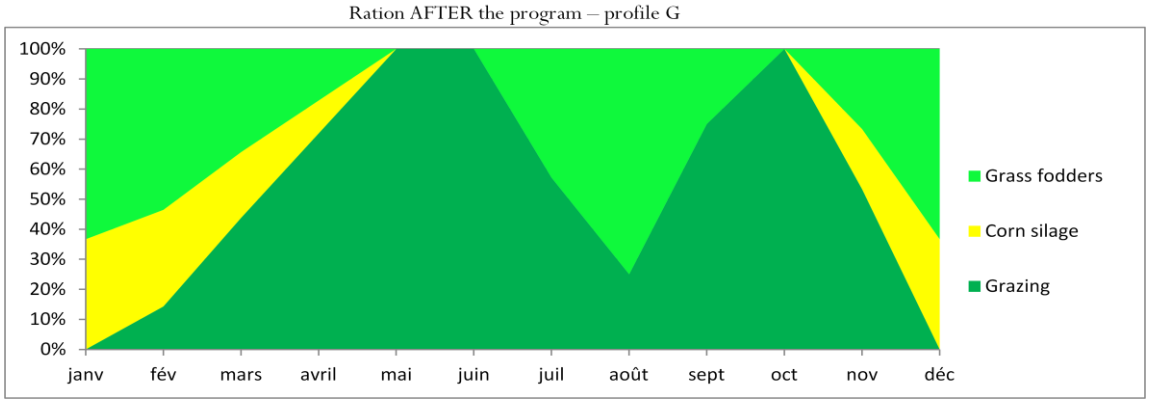


Figure 20: Ration's profile after the program (*source: Desprez, 2012*)

[6] The estimated cost of producing corn is 130€/T vs. 35 €/T for grazed grass (*E. Favre*)

The system has evolved towards a Grazer profile and the effects on the ration are:

- An increased grazing period over the whole year and therefore a more important part of grazed grass in the herd's ration,
- The development of fall grazing and consequently a corn silage pile closed for a longer period in the year,
- Development of summer and winter grazing as well, even though grass growth is slower during those times. This leads to the conclusion that the pastures are better cared for and managed leading to a higher productivity,
- The corn proportion is below 40% of the total ration and is only distributed for five months of the year, versus ten months before the training program.

This ration's evolution is a good illustration of what happens at the more global scale of the farm. Development of grazing and fresh-stocked grass[7], and therefore the diminution of the corn part within the ration, implies important expenses savings especially concerning high-protein feed purchase, mechanization, culture implementation, etc. As one of the trainees said: « *when the tractor stays in the barn it means that the farmer is making money*". The expenses saving compensates the decrease in production that is unavoidable when the ration is mostly based on low-calories fodders (in the example above, the mean production per cow before the program was 8 000L/DC/year and 6 200 L/DC/year after it). But there are also both the work amount and the condition that need to be taken into account here. In fact, most of the interviewees have confirmed that since they implemented a grazing system they had more free time for the same, or even higher, income. In addition many of them also mentioned that they liked and blossomed more in their job since they started "*walking their cows*" and watching the grass grow in the pastures instead of spending their time on the tractor to feed the livestock in the barn.

During the interviews many sentences confirmed that such as: "*grass is a real brainstorm but I love it!*", "*a cow is better off grazing and when they feel good, so do we!*", "*we used to work like slaves* [and today we] *work to live and not the other way around*". So it seems that, above all, grass is a passion and that many farmers who choose to develop their grazing system also do it to work in a different way and more respectfully for their environment.

In order to achieve a viable farm system in the long run, grazing systems must be a holistic approach, linking the environmental, economical and social aspects.

This type of evolution is one example of the possible trajectories for the trainees, but in the next part of this report it will also be presented three other main trajectories.

[7] Fresh-stocked grass: grass that is kept uncut in pastures for future grazing in times when grass-growth rate is slower.

2.1.3. Four main types of trajectories

The figure 21 below illustrates the four most commonly found types of trajectories within the farmers' population enrolling in the training program. Trajectory here means the main evolutions observed within the farm systems by comparing the profiles before the program and what they have become after it. The four colors illustrate the four types of trajectories, from the most wanted on the left (type 1 in blue) to the less wanted (type 4 in red). On the top level, we find the profiles before the program and the ones after on the bottom level. The arrows symbolize the possible minor trajectories within each main type.

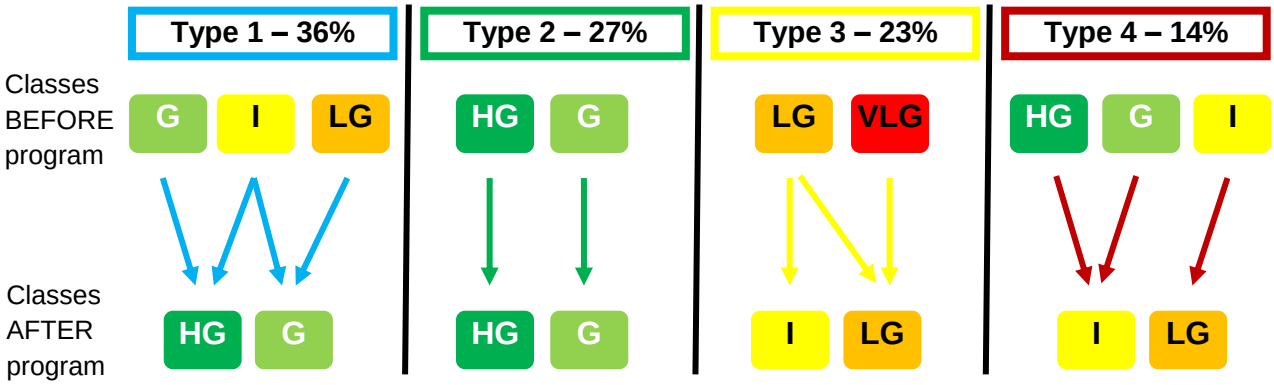


Figure 21: Main trajectories types (*source: Desprez, 2012*)

The characteristics of each of those four types are listed in Table 4 below.

Type	Who ? which farmer's profile (of before the training program)	What ? What kind of evolution	Why ? Evolution's reason(s)	Comments
1	Grazers, Intermediates and Low Grazers	**Significant evolution** towards more grass-oriented systems	- farmers motivated by GS and who overcame their fears towards changes (cf. part 2.3.1.) - farm structure more or less suitable for a GS - evolution speed linked to those criteria	- depending on their starting point, all the people from this type are not at the same evolution state
2	High Grazers and Grazers	**Little evolution**: **grass-based systems** staying the same with **grazing optimization**	- people who just refined their technique without major changes to the farm system	
3	Low Grazers and Very Low Grazers	**Little evolution**: systems the less grass-based staying **little grass-oriented**	- farmers not interested into GS - lack of trust towards GS and so fearing change, or lack of motivation	Some of this type's person can only be at the beginning of their evolution and could therefore be part of type 2 within the next few years.
4	High Grazers, Grazers and Intermediates	« **re-intensification** »	- external situation: market price, climate (eg. drought in 2010 and 2011) - within the farm system: unstable GS, partners with different goals or motivations - farm structure: fragmented land, roadway cutting the land, low available grazing surface area around farm buildings, etc.	- « re-intensification »: ration's proportion are shifting to less grazing and more corn silage, therefore leading to an increased mean production.

Table 5: Characteristics of the four main trajectories (*source: Desprez, 2012*)

Figure 22 illustrates the proportion of each of the four types in the total possible trajectories. It shows that types 1 and 2 are the majority, which is one argument towards the program's efficiency.

Types 1 and 2 together account for 14 interviewees out of 22, which is almost three quarters of the farmers interviewed. This statement can however be temporized by the risk of bias due to the investigation method, explained in part 1.6. of the present report.

The reflection focuses on how to offer a better coaching for types 3 and 4 in order to help them to evolve towards a thrifty and self-sufficient grazing system. This goes without forgetting types 1 and 2 who are also seeking some form of coaching, especially type 1 whose systems are not yet stable.

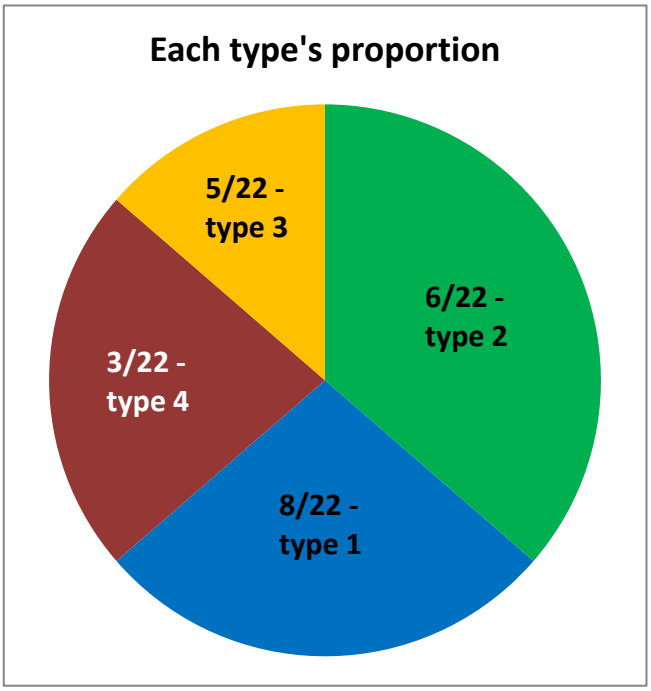


Figure 22: Proportion of each of the 4 trajectories types (*source: Desprez, 2012*)

2.2. Evaluation: a training program efficient for most of the farmers

2.2.1. The methodology is known…

The question is to know if the trainees have learned what was expected at the end of the two years of training:

- Technical knowledge about rotational grazing,
- Knowledge on pastures management,
- Knowledge about thrifty management of a grass-fed herd,
- Economical data on grazing systems.

According to the sayings of the people interviewed and to the different training groups reports over the years, this methodology seems well known by the trainees. It is quite difficult however, to measure how much the trainees remember from the two years of training. For that, it would be interesting to let the trainees fill up a questionnaire at the end of the two years asking them something like: “what have you learned from that program?”, or “what specific knowledge do you now have?”. Yet it can be pointed out that regular knowledge checks throughout the program are being done by the CIVAM animators, and the results are positive.

It can also be added that in the way the program is built, key methodological facts, such as correct grass height when the herd enters and exit a paddock or again how all the pastures should be grazed down at each season start, are repeated several times throughout the two years. Furthermore, technical days organized 3 to 4 times a year are also here to remind those key points. Another important fact about the efficiency of this learning step is that the trainer himself is a farmer and is therefore applying his own teaching on his farm, giving him a higher credibility to the eyes of the trainees. This fact has been confirmed several times during the interviews as well as during the training days. Besides, the trainer understands the limitations of the theory when applied to the field and therefore only teaches concrete facts easy to put into practice making it easier for the trainees to remember the teachings.

Photo 1: group in training studying a young pasture (photo by *CIVAM 44*)

2.2.2. … even if not always applied on the field…

Do the trainees apply in their own farms what they have learned in the program?

From what the interviewees have said as well as what was observed *in situ* when visiting farms, it seems that all learning are not transferred into the "real world". The most commonly applied teachings are the ones related to the implementation of rotational grazing such as: paddocks sized according to the number of grazing livestock heads, fixed fencing; and related to pastures management and especially seeding with the three advised species: ERG-WC-TF.

Photo 2: Trainee describing his grazing schedule (photo by *CIVAM 44*)

It is relevant to point out that most of the knowledge applied on field is about grass management and not herd's management. For example, many farmers would not leave their animals out in winter, even if they would save time and money to do so. Is it to understand that the trainees, who mostly think of themselves as breeders, are more eager to learn about and to apply something they know

less about, which is grass management, than regarding at what they consider like their specialty?

It is important however to insist on the fact that, for the program to reach its goal of implementing thrifty and self-sufficient systems, it is essential to have a holistic approach of the system. In fact, the risk of applying only part of the method - method which is of course adaptable to every farm – is to end up with a non-viable farm either from the environmental, social and/or economical point of view. And this can lead to trajectory type 4 seen earlier in this report in the results part, which is a return to a non-grass based system and consequently to the program's failure. It has been noticed that this case is most commonly found within the non grass-oriented profiles, at the start of the program, who have more to implement for a change of system and who need more than the two years of training.

2.2.3. … but a training program nevertheless efficient

Most of the interviewed farmers commented on the fact that their system was already grass-oriented and this even before they took part of the program. But they did mention that their pastures have, on a global point of view, increased in productivity since they started applying the method learned in the program. This is corroborated by the facts that the cows usually graze a longer time throughout the year and that the farms are more self-sufficient in terms of fodder resource. This can also be due to the fact that sometimes the number of livestock heads was reduced in order to fit the available surface area. It is always difficult to differentiate how much of the evolution is due to the training program itself from how much can be imparted to "natural" evolution which would have happened even if the farmer had not followed the program. One should keep in mind that most of the farmers who chose to sign up have already started the evolution process at least in their minds if not in practice.

Photo 3: Grass-fed mother cows (photo by *CIVAM 44*)

2.3. Coaching the farmers: how to reassure and to motivate?

Coaching methods, whether during or after the program, have the same goals: reassuring and motivating the trainees.

Reassuring from a technical point of view about grass management of course, but also about the choice of system in a general sense. In fact changing of system and walking into the unknown can be scary and it is important to feel accompanied and reassured during those times. The group effect allows this by; creating an evolution friendly atmosphere by grouping several persons who are going through the same changes together.

Staying motivated about the grazing system is also a key to success. Some times can be harder and it is tempting to go back to a more "*familiar*" system and to "*old habits*". What is more, there are some obstacles to change that are common among farmers; they will be described in part 2.3.1. of this report. The technique for implementing a successful grazing system is complex and even if the group effect keeps the motivation up, the time period between two training days can be long, and even longer once the program is over. As a consequence there is a high risk that once the farmers are back alone on their own farms they will lose faith and motivation for continuing to tend towards a thrifty and self-sufficient grazing system. As one interviewed farmer pointed out: "*once out of the training program, we come back here and that's it*", the "*that's it*" meaning to drop all efforts to change the system as a consequence of being isolated from the other "grazers".

The goal of the coaching method is to stand besides the farmers during and especially once the training program is over, as a solution to that isolation issue.

2.3.1. Jumping over the obstacles to change

Changing one's own system is not an easy task and several "cultural" obstacles may arise and be commonly found among the trainees especially concerning:

- **Production decrease**. In fact, productivism is the most common way to think in the farming world, starting in farming schools teachings. As a result, many farmers fear a decrease of their production thinking that it will automatically be linked to a decrease in income. A low production usually makes them feel insecure.
- The **community judgment** whether it is family, neighbors, sells men or technical advisors. All of them can morally pressure, whether on purpose or not, the farmers who take the decision to change their system and to try something uncommon. Many comments confirming this have been made during the interviews such as "*I don't like to see an empty barn, especially when I see my neighbors cutting the hay in the fields; you've done the grazing system and now you look stupid*" or else "*today we switch to organic farming and now we have to prove ourselves*" to the community's eyes. It is always easier to follow the main flow than to become an "original".

- **Accepting to change one's habits and way of functioning.** Farmers have to be open-minded and willing to try something new. One typical example of this particular obstacle to change is the refusal to turn the animals outside in winter time, even when the conditions are good and when there is some grass to graze, which is counter thrifty. "*Go outside a whole afternoon under the rain and we'll see how you feel*" is one example of the common arguments. The fact is, once used to it, the cows do not mind being outside and there is a lot to gain from it: less work, decreased risks of disease outbreaks or other sanitary issues, save fodder stocks, better pasture management and less risk of finding oneself with too much grass in spring, etc.

2.3.2. An already existent form of coaching

As far as coaching is concerned, some options are already in place within the network:

- Groups who want can keep going for a **third year** and chose as a group the themes they want to learn and talk about. This option has already been tried in the past and the lesson learned from it is that there is an existing risk of losing the impetus. It has been proved that if the training days are not led by a trainer or one of the CIVAM animator, the discussion can drift to other topics and the day lose its former goal. As a result the trainees can lose their motivation and stop coming to those days.

- Trainees who are willing to can join the already existing specialized groups which are the **milk, meat and sheep groups**. As their names suggest it, those groups get together breeders of a same production and who all have been part of the training program at some point. The only critic that could be made to those groups, and which is also responsible for their success especially for the milk group, is that the farmers who are part of the group are extremely close to each other in both friendship and opinions. This unique atmosphere allows the group to last and learn a lot but makes it also very difficult for newcomers who would be at a different state of evolution in their system or who would have different opinions (which is common for a good part of the new program's public) to become part of the group. As a solution, new groups could be created or, as it will be presented in part 2.3.3.2. of the present document, creation of local groups.

Photo 4: The milk group in training (photo by *CIVAM 44*)

- The **collex**, which is a group of CIVAM network's "grazers" who did not necessarily participated in the program but who all have successfully implemented a thrifty and self-sufficient grazing system and can therefore advice and discuss with the current trainees. A 6th day, called "meeting the grazers" was added to the training program schedule (cf. figure 8) with the Collex in order to insist on the fact that the farmers who follow the program are now part of a network and especially to show them that the model of grazing system taught during the program is not unique and can be adaptable to anyone's personal goals. There are as many grazing systems as there are people.

- **Technical days** which are organized 3 to 4 times a year plus aditionals during hard times like unusual climate for example. Those days are open to everyone; trainees who want a reminder of the technique, or people willing to follow the program in the future or just the curious ones about grass management.

- **Individual coaching** through phone calls between two training days. This technique is new and so is yet to prove itself, but so far it seems that is has a positive impact. It is true that it helps encouraging the trainees to implement on their own farms the teachings in between two training days as well as voicing any questions or doubts that they could have and this in a more freely way than when they are with the rest of the group.

2.3.3. Suggestions to move forward and coaching methods suitable for every need

The previously established typology is useful for targeting the type of coaching needed depending on each profile. It is important to highlight the fact however that every person and every system is unique and so the following suggestions are only a general idea. Personal motivations, goals and individual characters should be taken into consideration.

For example, it has been interesting to notice during the interviews that when the question "what type of coaching?" was asked, the answers were not profile dependant, as expected, but much more character dependant.

Thus, someone with a profile High Grazer may want an individual coaching type whereas someone with a profile Very Low Grazer might prefer continue to learn within a group.

2.3.3.1. Identifying farmers' profiles at the enrolment time

It would be interesting to recognize the farmers' profiles as soon as they enroll in the training program in order to identify the type of coaching they may need. The type and especially the duration of coaching a farmer might need will vary accordingly to what kind of system she/he is starting with and so on the amount of changes the person will have to operate in order to reach a thrifty and self-sufficient grazing system.

For this, a table has been created with various indicators to fill up, based on the ones used for building the classifications. This table is presented in annex 10.

It is only logical to state that the persons who are part of the classes I, LG and VLG at the enrolment time will need a longer coaching time as they have more to implement and change in their system than people from the two higher grass-oriented classes. It is important to be reminded that the lesser grass-oriented systems are more commonly found in the program now than they were in the first groups and that, today, there is no method yet to specifically coach them. As one of the interviewee stated, one of the key to success is to "*do an evolution and not a revolution*" and so a long-term coaching is essential for successfully implementing a thrifty and self-sufficient system.

2.3.3.2. Suggestions of coaching methods

In order to meet the demand for a long-term moral and technical coaching, the following can be suggested:

- **Local groups**: creating local groups composed by farmers from a same geographical area would encourage more farmers to join and would expand the network. Local key actors could volunteer and be in charge of the group to organize meetings in a regular basis throughout the year. This would help to develop a dynamic local network which could be a good follow-up after the two years of training. One advantage of local groups is that farmers do not waste so much time on the road and are therefore more willing and free to attend the meetings.
- **Integrating economical data:** it could be interesting for the farmers to study each other economical results in the second or third year of training. It could help them to evaluate as a group concrete potential savings and technical solutions for optimizing the system. A similar study already exists during first year, even if it is less advanced as the first year's trainees do not know each other well enough yet. It and would gain by being developed as this would help bring forwards economical arguments in favor of grazing systems and help some still hesitant trainees to make up their minds in favor of change.

- **Individual coaching**: above all, the CIVAM have a history of popular education and so, at the present time, do not have the competencies for a purely technical support to the farmers. An individual coaching from a "moral" point of view could therefore be implemented. In fact, as was stated previously in this report, many obstacles for change are related to social issues more than technical ones and so the CIVAM animators could individually coach the farmers to help them overcome those obstacles.
- **Study trips**: visiting grazing farms, from the CIVAM network or out of it, could show concrete success stories of what can be done in terms of grazing systems and how anyone can fit the method to their own goals. The added day with the Collex (cf. figure 8) during the training is already helping to develop this intellectual freedom and the trainees who experienced it so far really appreciated it.

Those suggestions are summed up in table 5 below:

Suggestions	Action Plan	Weaknesses	Opportunities
Local Groups	- Organized around local volunteered key actors - Communication within the network: publication of the geographical areas and key actors contacts - Partnership with the network other associations[8] in order to increase awareness and touch a wider public	- Depends on dynamic and available key actors - Keep a motivation and dynamism on the long run - Unfixed groups with people constantly joining or leaving it	- Improved coaching for the farmers after the program - Help open-mindedness and intellectual freedom - More people could be interested into joining the CIVAM network
Economical data	- Suggest as a third year theme to compare the economical data of the group	- Bet on the fact that the group will meet for a 3rd year - Ask transparency and open-mindedness from every group member	- Help the farmers to tend towards an economically viable system - Promote intellectual freedom

[8] The CIVAM is also a partner to other association working on sustainable and organic farming such as the GAB or the RAD.

Individual coaching	- Individual coaching for farmers who want it - Technical side took up by local key actors, during the technical days or within the already existing post program groups	- Provision of a service without involvement of the farmer in the network	- Could limit type 4 trajectories (cf. figure 21)
Study trips	- Regular trips, open to all but with a priority for actual trainees	- Means a cost that the farmers would probably have to pay from their own pockets	- Promote intellectual freedom - Increase the feeling of being part of a network feeling

Table 6: Suggestions for farmers' coaching (*source: Desprez, 2012*)

3. Discussion: “conventional” systems are not attracted by grazing systems

This study has shown that most of the farmers who enroll in the training program have extensive and grass-oriented systems, and this even before starting the training. In fact, even the farmers that have been classified in the class Low Grazers have a system that is relatively extensive. So the question is: why are those with intensive systems not interested into converting to intensive grazing systems?

As it will be discussed in this part, farmers may find a lot of advantages in grazing systems at every levels, but it seems that there are also limits preventing farmers from implementing it. The discussion will therefore be about the advantages of the grazing systems model advocated by the training program but also the reasons why it is not more popular.

3.1. Livestock farmers profiles: the “CIVAM type” is extensive

Describing a system as extensive or intensive is subjective and has to be replaced into context. This is why a comparison will be drawn in this part between the systems found within the CIVAM network, the ones most commonly found in Western France and a couple of international examples.

A system is qualified as “extensive”

Western France includes the regions of Pays de la Loire, Brittany and Normandy (inside the red square in the figure here opposite) which are mainly areas of animal production, crops grown for animal feed and some cash crops grown in the most fertile areas (cf. figure 23). Some of those systems can be relatively extensive, such as cow/calf operations in southern Pays de la Loire, while others can be more intensive, such as some dairy farms in Brittany for instance.

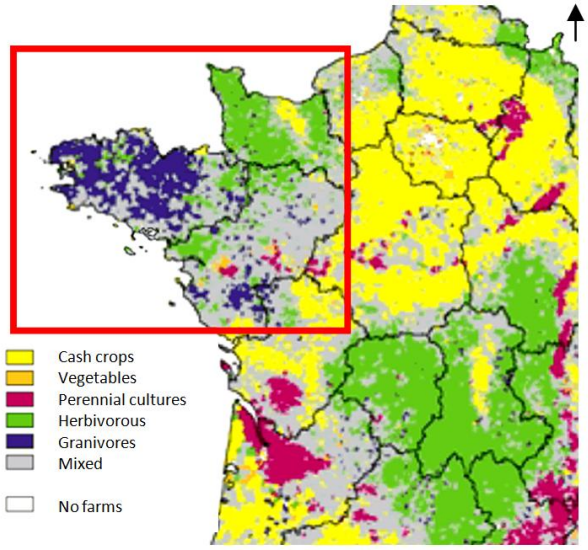


Figure 23: Farming soil occupation in Western France (*source: Ministère de l'Agriculture et de la Pêche*, 2001)

3.1.1. A profile commonly found in the training program: extensive systems

Most of the farmers who enroll in the training program have a system that can be qualified as extensive, that is: a low productivity and a large proportion of their FdSO occupied by grasslands. Even though this tends to evolve and a new group with more “intensive” systems are now interested in the program these “new” trainees are still relatively small farms already managing grass as a fodder.

We will not further detail this type of profile, as it has already been described earlier in this report, but we will look into the internal reasons that make it the most represented profile found in the program. “Internal” means that part of the explanation comes directly from the way the CIVAM works and, more specifically, how people hear from the training program. The CIVAM DEFIS is run by a board of farmers, as it was explained in part 1.1.4., who are already CIVAM members. An important proportion of those members came to join the CIVAM after hearing of it from their neighbors, friends or during professional meetings. The main limit of this informal advertisement is that it stays within the same circle of people having similar opinions. What is more, the CIVAM itself is classified as an “alternative” association regrouping only “this type” of farmers, those whose systems are described as extensive. The same principle applies to the training program: most of the farmers join it because they heard about it from a friend who, usually, has the same opinions about farming. An interesting example happened in one of the latest training groups: five neighboring farmers who did not match the usual type found in the program, their systems were slightly more intensive than usual, decided to follow together the program and thanks to the group effect have found their place within the program and were able to implement important changes on their farms. We can ask ourselves if it would have been successful if only one of them would have joined the program. This had happened before and those “isolated” more intensive farmers have quit the program at its beginning showing that the success rate is much lower for them. The main issue here is that farmers outside the usual circle feel like “this” is not for them, they feel less part of the group. As Le Rohellec (2011) very rightly explained for the PraiFace project (cf. part 3.2.): “*In the process of technical changes, what matters […] is whether or not there is a position of isolation within the local network*”. Even though the animators are trying to keep political discussions away from the training days, the agricultural world is highly influenced by politics and the various farmers unions.

But, as it will be later discussed, this is not the only obstacle to the implementation of grazing systems.

3.1.2. The extensive systems are not the rule everywhere however

As opposed to the extensive systems described above, we can find in Western France intensive systems or “conventional” as we will call them later. We will not describe those systems in details as they are not the topic of the present study but basically rather than relying on grass to feed the herd farmers would use a corn/soya system. As a consequence both their productivity per cow and their fodder expenses are high. Their investment rate is also very high and they produce important amounts of goods. The common crop rotation is either corn on corn or corn on cereals and the proportion of grasslands within the FdSO is low. Those systems rely heavily on inputs to maintain high levels of production.

In most of the cases, livestock farms in Western France are positioned half way between extensive and intensive systems as they usually use grass-based fodders such as silage as well as corn to maintain a certain level of productivity crucial in order to keep the farm financially afloat. Even though, it usually means that farmers are working long hours for earning a mediocre income.

Those systems could also be seen as extensive if we put them back into a more international context. The “new” Danish model in dairy farms, for instance, is highly specialized and intensive: hundreds of dairy cows are kept indoors all year round while farmers are only taking care of the herd and hire someone else for growing the fodder cultures (*Gaboriau et al., 2009*). The United States are another good example of intensive dairy industry: the dairy farms’ sizes keep increasing and the operations with 500 head of dairy cows and over were accounting for over 55% of the total dairy operations in 2009. The farms with over 2000 head of dairy cows are becoming more and more common there and the average rate of milk production was reaching 10 000L/DC/yr in 2009 whereas in France it was only slightly above 6 000L in 2008 (*CNEIL, 2008*). The high productivity rate in the US could be explained by a typical ration highly-energetic made of corn, alfalfa hay and soybeans (*USDA, 2010*).

Photo 5: Intensive dairy farm in CA, USA (*source: PennState University*)

3.2. Grazing systems can be highly profitable

Thrifty and self-sufficient grazing systems have proven to be very profitable for the farmer at individual levels but also for the rest of the society and from an environmental point of view.

3.2.1. Grazing systems: work better in order to earn more

Rotational grazing systems have proven to allow farmers to have better working conditions for a similar, or higher, income.

People who have switched from a "conventional" system to a grass-based system have noticed the difference: they work less and in better conditions. It is especially the seasonal work that have decreased (*Alard et al., 2002*): less time spent feeding the cows and cleaning the barn; less time spent in seeding, spraying and harvesting the forage cultures. As André Pochon said "*a cow has a cutter bar in the front and a spreader in the back*" and so, logically, it saves time to let them graze and do all the work. Of course, all paddocks need to be fenced, a water network needs to be set up and access paths to be build, but once this is done it should last for a least some years. Hay season and milking are still very time consuming however, and cannot be drastically reduced.

The working conditions are also improved as farmers are usually more alligned with their own values. Those were often cited during interviews as being the protection of the environment and to produce high quality products. Additionally, they are usually more independent in their decision making process on their own farm and feel more in charge of their business, which is always enhancive.

Paradoxically, switching from an intensive system based on corn silage to an extensive grass-based system does not imply a decrease of income, and might even be the opposite (*Pochon, 2003; Alard et al., 2002; RAD & CVAM, 2009*). It costs approximately 5 times less to let a cow graze than to hand feed it (*Pochon, 2003*) and consequently, when the proportion of grazing increases, the cost of the ration decreases. As such grazing systems are based on a thrifty strategy (*Alard et al., 2002*), the same principle applies to all the other expenses such as fuel, inputs or building construction. The following table is a comparison of economical results between two groups: the first one on the left column compiles the results of over 100 farms with a thrifty and self-sufficient grazing system while the column on the right represents the more "conventional" farms.

Results	Farms with a grazing system	"Conventional" farms
Milk sold (L)	275 882	316 127
Productivity (L/DC/yr)	5 485	6 537
Turnover €	160 244	184 606
Added Value €	73 388	62 151
Gross operating income/profit €	69 601	60 590
Net operating income €	45 583	32 367
Of which CAP subsidies €	20 119	24 927

Of which AEM €	5 168	2 160
Of which total subsidies €	25 286	27 087
Feed expenses/1000 L €	75	127
Mechanization expenses/ha €	416	518
Added value/sales	52%	38%
Gross operating income/sales	44%	33%
Net operating income/ sales	28%	18%
Theoretical income (= Gross Operating Income – years' expenses) €	48 845	34 233

Table 7: Economical comparison between grass-based systems and "conventional" ones (*source: RAD & CIVAM, 2009*).

This table shows well that even though the "traditional" farms are producing more (316 127 L vs. 275 882L), the income at the end is higher for the farms with a grazing system (48 845 € vs. 34 233 €). This is due to reduced expenses, in both mechanization (which includes chemicals, seeds and fuel) and herd's feed cost, for farms which have implemented grazing systems.

3.2.2. A way to preserve the environment

Rotational grazing systems allow to farm while respecting the environment through various means.

First of all, chemical use is limited in grazing systems. Since leguminous plants such as White clover (Trifolium repens) are planted in the pastures, nitrogen fertilization is ineffective and even harmful for both the plant and the animals. André Pochon (1993) noticed in his experimentations that if nitrogen was applied on a pasture on a regular basis, the white clover eventually disappeared and the pasture was damaged. Then if too much nitrogen is spread, the excess will be washed off and will pollute watercourses and the plant will be too rich in nitrogen which is useless for the animal. What is more, an overfeeding of nitrogen by 10% leads to an increase of 15 to 20% (equals 15 to 20 kg/year) of nitrogen rejection by cows (Chatellier & Vérité, 2003). Grazing cattle will also naturally provide the pasture with enough nitrogen as they normally return to it 60 to 80% of available nitrogen (Blanchet et al., 2003), which equals, or is slightly inferior to the amount taken off by consumed fodder (Chatellier & Vérité, 2003). This will only be true, however, if the cattle are evenly distributed on the land and if the number of head is fitted to the available surface area. As Chatellier & Vérité (2003) stated in their study: "the number of cattle head per surface area is one of the key component of the relationship between livestock breeding and environment". Rotational grazing technique limits that risk as the livestock rotate quickly and is artificially distributed

evenly all over the land. Besides, number of cattle head per hectare needs to be kept under a certain threshold in order to maintain self-sufficiency in fodder resource.

The use of other chemicals, such as pesticides and herbicides, on fodder crops is also reduced thanks to an improved crop rotation (*Journet, 2003*). In fact, fodder crops, usually corn and mixed cereals, are planted after a long-term pasture and the soil is therefore already rich in nitrogen and poor in crops' pests and weeds. As the farmers say themselves: "*the corn grows on its own!*".

The soil structure is also considerably improved with this rotation and wash-off is reduced thanks to the long-termed soil cover. Bio indicators, such as the presence of certain plants or underground micro-fauna, are useful for an easy and quick evaluation of the soil health. This has been done during one of the training days and the results were satisfactory.

The presence of other bio indicators, like birds for instance, can also be used to evaluate the biodiversity of the farm. Even though biodiversity seems enhanced by grazing systems, there are some limitations to it in the method recommended in the training program. First of all in terms of plants' biodiversity: it is suggested to work with artificial pastures made of only three species. Natural pastures are much more diverse which benefits to both the land's biodiversity as well as for the herd's health. On the other hand natural grasslands are known to be less productive and harder to manage.

Another limitation exists in terms of domestic biodiversity. In France only three cattle breeds are mainly used even though there are more than 40 registered breeds as shown on the figure 24 below.

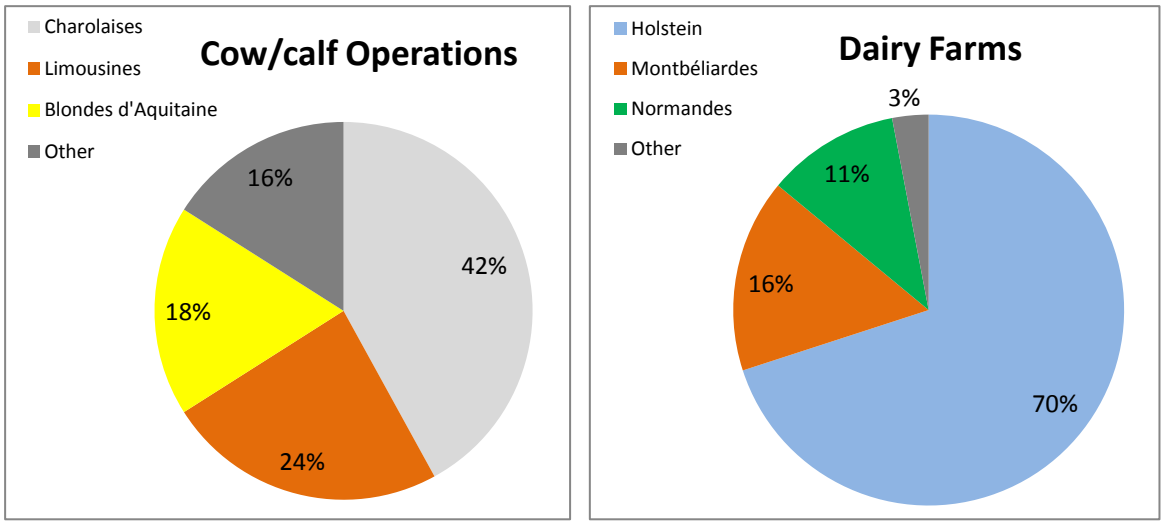


Figure 24: Main cattle breeds raised in France (*source: Méda et al., 2007*)

It is true that those breeds are the most productive but they do not necessarily have the best genetic for grazing systems. The Holstein, for instance, have been especially bred to produce large amounts of milk and they need a high protein content feed otherwise they will quickly lose weight. As one of the interviewed farmer stated: "*you cannot fill up a Formula 1 with water*". The same is true for Blondes d'Aquitaine in meat production. In New-Zealand for instance, where they have been working with grazing systems for a long time, they have improved their breeds' genetics and have come up with crossbreds highly efficient on grass such as the KiwiCross cows, which are Holstein bred with Jersey cows. Some French farmers are now chosing to import New-Zealand genes in order to improve their own herd's genetics.

Grazing systems are also beneficial for preserving the traditional hedged farmland landscape since it encourages the conservation or the planting of hedgerows, with all the environmental advantages this implies: limiting soil erosion, improving water quality, enhancing biodiversity, providing a renewable energy source, etc.

Photo 6: Traditional hedged farmland landscape (*photo by L. Desprez*)

Finally grazing systems help to keep the fuel consumption down in both direct and indirect ways. Directly by limiting the hours spent on the tractor on the farm. Indirectly by limiting the imported feed, and especially the soya from overseas, and this will also benefit the rest of the society as it will be further discussed in the following part.

3.2.3. Grazing systems are also beneficial to the rest of the society

Self-sufficient grazing systems limit feed importation from overseas and therefore do not monopolize land in other countries to feed the livestock contributing indirectly to the preservation of farmers' rights in other countries. Grazing systems are often blamed for occupying a larger surface area than more intensive systems as they have a lower productivity per hectare. However if we look at the pig picture here, grass-based systems only need that one piece of land where they are implemented where intensive systems indirectly use more land oversea for growing the soya they need in their system, with all the consequences described earlier in part 3.2.3. It could also be added that we are talking about rotational grazing here, which has a much higher productivity than other grazing systems such as continuous ones for instance (*Voisin, 1959*).

Grazing systems also cost less to the society as they require less public subsidies than other systems, as shown on table 7. That makes them more viable in the long-run and economically stronger which is an important point in the context of economical crises that we are now facing. They employ 10% more worker, on average, than “conventional” systems do (1.95 workers vs. 1.76) (*RAD & CIVAM, 2009*).

Finally the food produced through grazing systems is known to be healthier for the human population (*Journet, 2003*). Milk produced by cows that have been fed grass is good for the heart (*American Journal of Clinical Nutrition*) and grass-fed beef is low in Omega-6 saturated fatty acids and rich in Omega-3 fatty acids which, among others, lower the risks of heart attack, high blood pressure, cancers and brain disorders (*Johnson, 2000*). The issue is that today, grass-fed products are not officially recognized and there is no way to differentiate a grass-fed beef from a corn-fed one in the stores and similarly with dairy products. It would be interesting to brand these products both for the farmers who would get a higher value out of their products and recognition of their work as well as for the consumers who seek high-quality food.

3.3. Why are people with only the most extensive systems interested in new grazing systems?

In part 2.3.1. of the present report, some obstacles to change have been presented such as a fear of production decrease, peer pressure or fear of the unknown. Those three are part of the reason why some people hesitate to implement a new and more intensive grazing system, but they are not the only obstacles.

PraiFace is a project that is being commonly run by 13 advisors from the CIVAM and the RAD, with the participation of a dozen farmers groups and some institutions such as INRA and the French Livestock Institute (*Institut de l’élevage*). The goal of that project is to understand the reasons why only a few number of people are interested in grazing systems even though they can be very profitable. Various actors of the agricultural field (farmers, technical advisors, teacher, students, etc.) have been interviewed and the results found so far match what transpired from the interviews of the present study. Surprisingly, even farmers who are not working with grass are well aware of the economical benefits that such systems can offer. Consequently the ignorance about grazing systems’ economical advantages cannot be considered as an obstacle to change. Public subsidies that might not favor grazing systems were neither found to be an argument against them (*RAD, 2012*). And so it seems that the main obstacles that prevent a certain number of farmers from implementing grazing

systems are related to arguments such as the farm structure, their system's economic orientation or, once again, the way farmers perceive grazing systems.

3.3.1. The system's structure can limit grazing systems implementation

The system's structure includes two dimensions: the farm structure itself and the economical choices influencing the system.

The **farm structure** can be an important obstacle to a rotational grazing system's implementation, especially in dairy farms. In fact, dairy cows need to be brought in twice, or at least once a day for milking and so the farm needs to be structured in a way that an important grazing surface area is available around the core buildings. Some farmers interviewed, and highly interested in grazing systems, are having pastures as far as one kilometer away from the milking station, which means that the cows were walking four kilometers a day[9].

Important roadways crossing the farm can also scatter the land and be a limiting factor for a grazing system. It is therefore easier to implement rotational grazing systems for heifers or suckling cows, for instance, as they can graze pastures located further away from the main buildings.

During their career path, farmers make some **economical choices**. First at the settlement time, for those who have a choice and do not take over the family farm they have to decide how much they are willing to invest. This first step will have a considerable impact on the rest of the career since they will have to produce accordingly to the amount of money first invested. In fact a farm is similar to any other type of business in the way that if the loan to launch the business is very important, then an important amount of goods need to be produced in order to reimburse it. This has been confirmed by some interviewees who made a heavy investment at the beginning of their career: "*earlier we could not implement a grazing system because we had loans to pay off, but today it is different and we can afford to produce less*". This matter leads to an important issue in the French agricultural world nowadays related to farms' sizes. As the farms are getting bigger and bigger[10], their prices

[9] It is important to specify here that in the rotational grazing method, once the herd has entered a paddock they have to finish it as fast as possible before moving on to the next one. This implies staying in the same paddock until the correct grass height is reached. So, no night or Sunday paddock.

[10] Since 2000 the mean farms' size have gain 13 hectares, rising from 42 ha to 55 ha in 2010, 25% of which are above 82 ha. As a consequence the number of farms has decreased by 26% during those 10 years (*Le Monde.fr; agriculture.gouv.fr*).

increase. This is especially true for cash crop farms for which prices are reaching extremely high levels. As a consequence, no one can afford to buy them anymore, except if the farms stay within the family or if third parties invest in it such as industries or foreign companies. In animal production the issue is not yet as problematic since the farms' sizes remained relatively small due to quotas limiting the production. However those quotas will disappear in 2015, with the new CAP orientation (*FranceAgriMer*), and the issue might arise at that time. In fact, it already has: in the Somme department (*Picardie, Northern France*) a business man owning a building company is investing into the project of a farm of 1000 dairy cows, over 1700 head of cattle total (*RéussirLait, 2012*). This example is a good illustration of a potential threat to French agriculture and to farmers' sovereignty.

Farmers are also making economical choices later on during their career according to their production goals. For instance, some people like to "*make some milk*", for them a good cow is one that "*spits out milk*" or, for meat producers, a cow that will win all the awards during shows. In order to reach those goals, the farmers will be likely to invest in buildings or machineries to maintain high levels of production, which will also make them look successful among their peers. As a result of such long-term investments they will be "stuck" in their production system and this will not be an issue as long as they are not planning to change it. It will become one however if they decide to switch to a low-production system, such as grazing systems. It is true that many farmers are making those types of career choices according to their own preferences but this is not always the case. They can be pressured (cf. part 2.3.1.), on purpose or not, into staying in the main model, the "traditional" one. This leads to the question of intellectual freedom and farmers' sovereignty that will be further discussed later on.

3.3.2. Grazing systems: a picture of the past

For many, grazing systems is something belonging in the past and which is now obsolete. This statement has to be put back into context however. During the 60's France, and the whole Europe and in a context of post-war, countries are attempting to rebuild themselves by encouraging high productivity and modernization. In the agricultural world, this resulted into the development of mechanization, the use of chemicals, increased yields and production, better work conditions and increased income. Corn was the new revolution and cows were taken out of the grazing fields. For the people who experienced both types of farming (before the 60's and after it), it was a huge step forward. This highly productivist system is questioned since the 90's but is still the norm in our modern agriculture. Older generations are now arguing with the new one who is attempting to demolish what they have acquired. A good example of this lies with hedgerows: nowadays, it is common to see daughters or sons

replanting hedgerows which their fathers or grandfathers had taken so much energy to put down. It could be qualified as a conflict of generations. The goal with the grazing systems, however, is not to go back the way it was 60 years ago but instead to use modern farming techniques and knowledge towards a more sustainable way.

However the knowledge of how to grow grass have been lost along those evolutions; grazing systems can now be seen as complex, difficult to manage and therefore stressful. Today, grass is mostly managed as a bonus or a way to please the cows and not as a fodder resource in itself anymore (*RAD, 2012*). A system based on corn silage would be perceived as much more secure both in terms of fodder stock and for the maintain of a constant and higher production. Additionally it is a system that is well mastered now since it was been done by two generations already. It is easier to follow the steps of the ones before us than to innovate and walk into the unknown.

3.3.3. Sovereignty given the farmers in the agricultural world?

In today's agricultural world, farmers are not the only actors and possibly not the most influential ones. The politics influence the system, of course, through subsidies and laws. However, as the PraiFace project shows (*RAD, 2012*) and according to what has been said during the interviews of the present study, politics are not the main influence on farmers. So what is?

It seems that private companies and industries are putting a lot of pressure on the farmers. Some companies control the entire chain: they sell the seeds and by-products, sell technical advices and buy the end products. It turns out to be less stressful for the farmers to stay in this secure circle. Those private companies will put incentives to farmers to produce more so they become more profitable clients. Some dairy industries even decide which farmers can convert to organic or not according to their collect circuit: if the farmers decide to ignore their advice, they may lose their buyer and it then become complicated for them to find a new one.

Throughout history, motivated farmers have decided to take the matter into their own hands and have created partnership for collecting products like milk for instance. The cooperative Isigny Sainte-Mère in Normandy is a great example of such success story for instance. This farmers association started in 1932 with 42 producers (*www.isigny-ste-mere.com*) and is today internationally renowned. The risk of such success, however, is that it may lose what makes its own identity which is working with and for the farmers.

Farmers sovereignty is not only a local issue and farmers from all over the world are facing this problem. This is well illustrated in Dirk Barrez's short film: *Cow 80 has a problem* (2007). The author draws a comparison between farmers from Senegal, Brazil and France to

illustrate how they can be closely related to each other and how their livelihoods is impacted by international agrifood chains. A good example of this lies with the corn/soya system: French farmers are pressured to produce milk with corn silage and consequently have to import soya from South America, usually Brazil, in order to balance the ration. And then, while the French farmers are subjected to the world market soya prices' variation, Brazilian farmers are losing their land bought in favor of big companies producing and exporting soya. The only winners in this story are the international companies.

It is true to say that farmers are free and can choose to stay out of the system if they are willing to, and this is one of the reasons why some of the interviewed farmers have chosen grazing systems. The pressure is however very strong and is starting in the agricultural schools. One of the CIVAM mission is to increase farming students' awareness towards more innovative ways to farm, such as grazing systems. The conclusion drawn by the animators who tutored in schools and by the farmers who trained students is that most of the schools only teach the "conventional" model, some schools are even hostile to innovative ways. The students are therefore ignorant of alternative systems. This is why it is extremely important to promote intellectual freedom and to develop participatory action from the farmers. They should be able to choose their own production model and livelihood.

Conclusion

Some conclusions can be drawn from this study. First of all the data mostly gathered during the semi-directive interviews showed that an important proportion of the farmers who enroll in the training program have already grass-oriented systems and this even before the start of the training. All of these systems were different however and five main farmers' profiles could be ranged from the most grass-oriented systems to the very low-oriented ones. They were classified according to various indicators such as the mean productivity, the farm land occupation or the herd's ration. From the evolution of those profiles over the years, four main types of trajectories were defined and it was highlighted that most of the farmers who followed the training program have successfully implemented a thrifty and self-sufficient grazing system, or are in the process of doing it. One fourth of them however did not succeed for various reasons: an external or internal factor that pushed them back into the way they used to farm; their individual goals which did not meet the program's; they had too much to change on their system and consequently either have dropped the idea of implementing a rotational grazing system or are still at the beginning of the evolution process and it is therefore too early to tell which direction they will go to. A certain amount of obstacles can also result in the failure of a rotational grazing system implementation such as the fear of production decrease, a wrong perception about grazing systems or again peer pressure to stay into the "conventional" way of farming.

As a result of these trajectories types, it was found that the training program is relatively efficient in helping farmers to implement grazing systems but that there are still improvement to be made in terms of post-program coaching, especially for the farmers who have the less grass-oriented systems at the enrollment time.

Encouraging the implementation of thrifty and self-sufficient grazing systems is a challenge that, if successful, can be profitable for everyone as they are sustainable systems with a good level of productivity. In fact they could be part of the answer to the modern agriculture's challenge which is feeding the world's population with good quality food while preserving the environment. No system is perfect however and this example is no different from the others, but coupled with other techniques such as short-food chains and production diversification its sustainability could be improved.

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Appendixes

Appendix 1: Agri-Environmental Measure 01.04 charter

Appendix 2: Working schedule

Appendix 3: Survey Guide

Appendix 4: Example of fresh thoughts right after an interview

Appendix 5: Sample of table 1: transcript of the interviews

Appendix 6: Sample of table 2, the second step of data analysis: multiple indicators table

Appendix 7: Indictors for the classification BEFORE the training program

Appendix 8: Indicators for the classification AFTER the training program

Appendix 9: Characteristics of each of the 5 farmers' profiles most commonly found in the training program

Appendix 10: Data table for establishing the trainees profile at the enrollment time

Appendix 1: Agro-Environmental Measure 01.04 Charter

CIVAM Regional Federation Pays de la Loire. February 2003. Guide for the 01.04 measure – encouraging grass-based systems

Measure 01.04 charter:

- you have two years to meet this charter requirements.

- requirements of the 01.04 measure – low inputs grass-based systems:

- Grass-based system:
    - Minimum 55% of the farming soil occupation in grassland
    - Minimum 75% of the fodder soil occupation in grassland
    - Maximum 40% of corn silage in the ration (1200 kg DM/head)
    - Maximum 1.6 head/ha of FdSO
- Organic matter fertilization:
    - Total amount of organic matter nitrogen, related to the total of animal manure produced on the farm and imported, should not exceed 140UN/ha of FSO
    - Total nitrogen (organic matter nitrogen+inorganic nitrogen produced and imported on the farm) should not exceed 170 UN/ha of FSO
    - Non composted fertilization (animal based or other) is limited to 70 UN/ha of FSO
    - Spraying of liquid manure is forbidden from August 15th to February 15th, with the exception of pastures when the climate allows it, at the maximum dosage of 35UN ammoniac/ha.
- Inorganic nitrogen fertilization:
    - None on pastures, corn, beet root, cabbage, potatoes, peas, green beans, horse beans
    - 100UN/ha maximum on winter cereals or rape, first input no more than 40 UN/ha and not before February 15th. 60 UN/ha on spring cereals and only if necessary
- Chemical treatment (except for organic production):
    - Make a diagnosis on situations sensitive to chemical risk
    - On cereals and other cash cultures, only one weed killer, no growth regulator or pest repellent
    - Products based on imidaelopride are forbidden
- Preserve and highlight the landscape:
    - No wetlands drainage for cultures purpose
    - No destruction of banks across slopes or in valleys bottom
    - Maintain and management of hedgerows
- Other:
    - Accurate fields book
    - Keep track of manure spraying for each fields every year

In order to receive subsidies, those requirements are mandatory. Various points are strictly controlled by the CNASEA (National center for structure planning of farms) and the DDAF (Departmental direction of agriculture and forestry).

Appendix 2: Working schedule

Weeks from January 16th (w 3) until July 13th (w 28)	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Bibliography	+	+	+	+																						
Meet with key actors	+	+	+	+																						
Analysis of previous training days reports		+	+	+	+																					
Raw trainees classification		+	+	+	+																					
First classification				+	+	+																				
Building up survey guide						+	+	+	+																	
Conduct interviews								+	+	+	+	+	+	+	+	+										
Interviews transcription – table 1								+	+	+	+	+	+	+	+	+										
Concise data table – table 2														+	+	+	+	+								
Build up classifications															+	+	+	+								
Build up typology																			+	+	+					
Program evaluation																						+	+			
Coaching suggestions																							+	+		
Preparation public meeting																							+	+	+	
CIVAM report																			+	+	+	+	+	+	+	+
ISARA/UMB report														+	+	+	+	+	+	+	+	+	+	+	+	+

Appendix 3: Survey Guide

1. Presentation

1.1. Could you briefly present your farming system ? .....

1.2. Could you talk about your farm's past ? : .....

1.3. Could you introduce yourself ? .....

1.4. Can you describe your background before settling on the farm ? : .....

1.5. What were your goals when settling ? : .....

1.6. And today ? : .....

1.7. What did change the most on your farm since you settled ? : .....

1.8. What drove those changes ? : .....

1.9. What do you like the best in your job ?.....

1.10. And the less ? :.....

1.11. How would you describe a good cow ? .....

1.12. Did you think the same a few years back ? .....

2. Grazing system

2.1. What do you hear around you about grazing systems ? : .....

2.2. And yourself, did you always had the same opinion about grazing systems ? : .....

2.3. And today ? : .....

2.4. On your own farm, what are the obstacles for a grazing system ? : .....

2.5. And conversely, what are the advantages for a grazing system ? : .....

3. System's sustainability

3.1. How did your working conditions evolved since the past few years ? : .....

3.2. What are the reasons why, do you think ? : .....

3.3. Did you notice a change in your income or expenses during those same past years?

3.4. What are the reasons why, do you think ? :.....

3.5. How do you perceive your own system's sustainability? : .....

3.6. What is, according to you, the definition for self-sufficiency ? .....

3.7. Where do you place your own farm according to this definition ? : .....

4. Training program

From what I heard, you followed the training program in …

4.1. How did you heard of this program ? : .....

4.2. Did you know the CIVAM network before that ? And if yes, how ? :.....

4.3. What did you discover in the network ? :.....

4.4. What were your goals and motivations for enrolling in the program ? : .....

4.5. Did you reach those goals ? : .....

4.6. Did you notice an evolution of your reflection as the program went on ? And if yes, could you explain ? : .....

4.7. What did you change since the program ? :

4.7.1. In the way you do things ?
4.7.2. On the farm ?
4.7.3. In your acquaintances circle ?

4.8. A few years back, did what you first expected from the program what you got ? : ...

4.9. If the training program was to evolve, what should be kept the same ? : .....

4.10. And to the contrary, what should be changed ? : .....

4.11. According to you, what could further help the farmers to reach their goals once the program is over ? And more specifically, how could the CIVAM smoothe the transition towards a grass-based system ?

4.12. Did you learn anything from the program besides the technical aspects? :.....

4.13. Are you part of any other similar types of programs ? If yes, which ones and where ? :

4.14. What source(s) of agricultural advice do you use ? :.....

5. Summary and future projects

5.1. If I understood well, the main steps since your settlement have been :

5.2. What push you to those choices ? :.....

5.3. Is there anybody else involved in the decision making process on the farm ? And if yes, to what extend ? :

5.4.In your career, what are your main sources of satisfaction ? : .....

5.5. Is there anything you think you have been less successful in doing ? : .....

5.6. What advices would you give to a farmer thinking of implementing a grazing system of his own?: .....

5.7.In practical terms, how do you see you farm in ten years ? : .....

5.8. And now imagine it in 10 years, supposing that there are no limits whatsoever ? How would the ideal farm looks like? Use your imagination ! : .....

Sociological stub

Age: If over 50, successor planned ?

Settement date: Education:

Parents' jobs:

Responsabilities out of the farm:

Spouse working outside:

Qualitative Data - trajectory (past and present)			
		Before	After
Farm system	Main production		
	Other productions		
	Number of worker		

	Types of soils			
	Number of head/ha			
	Organic Farming	Yes		
		In conversion		
		No		
Soil Occupation	FSO (ha)			
	FdSO			
	Fodder cultures	Pastures (what grass species)		
		Corn		
		Cereal mix		
		Beet roots		
		Other		
		% FdSO (except grass)		
Production	Quota	Amount produced		
		Supposed produced amount		
	Mean production of milk/cow/yr			
Herd's management	Number of producing cows			
	Breed			
Nitogen fertilization on pastures	Nitrogen + how often			
	Other fertilization + how often			
Use of hemical products	Increase			
	Decrease			

Appendix 4: Example of fresh thoughts right after an interview

Interview with Dominique D. - March 30th 2012 – Vertou (*location*) – Vincent's brother; breakfast ; black dog (*mean to remember the person*)

Type: Intensive (especially from his father's system) leaning towards a grass-based system while still keeping a high productivity.

According to him, he has a perfect farm to do some grazing and for him there is no better way to farm (but is not too much into environmental protection; it is more about the economical point of view and time saving). Lacks hedgerows and so lacks grass (plus drought during the last three years). Has a low number of heads/hectare and a very large accessible surface area so is still okay with grass production. Seem to be very strict with the grazing technique (loves the trainer and his technique, which is strange compared to what the others of his profile are saying → so check with other "intensive" profiles to double-check that information (*hypothesis*)).

In the future, it seems that he will stay in a grazing system (his farm's physiognomy is too well made for grazing that it would be foolish to change, according to him). Another advantage is that, in his area, he does not have to many neighbors and those he has are all into grazing systems → so encourages him in that direction.

So, in the long run, it seems that the cows' ration will be in majority of grazing with still quite a lot of corn silage, and so soya. He thinks a lot, however, about the species he could seed according to his type of soil and climate and hope to be independent in protein.

Appendix 5: Sample of table 1: transcript of the interviews

Questions	Interviewee	2 - S. M.
	Date of the interview	March 9
Presentation		
1,1	Farm presentation	*en VA; fait un peu de cahnvre (2ha); installation en 2006 (avec reprise 50 ha d'un voisin); vente directe un peu et qui se dvp*
1,2	Farm history	*Exploitation familiale;2 ateliers avant en VL et VA; déjà en SH*
1,3	Trainee presentation	*Marin pêcheur pendant 15 ans donc extérieur au milieu et de ce fait a peut-être moins de freins pour mettre des choses en place et faire ses propres expériences*
1,4	Career	*Bac technologique en STAE puis BTS GTA puis travaille un peu en assoc de remplacement; études d'avantages ds le machinisme et en lycée orienté plus productivisme*
1,5	Goals at the beginning	*Produire le quota avec un système extensif, simple et rustique; valoriser au mieux les produits lait et viande*
1,6	Today's goals	*S'agrandir*
1,7	The most changed	*Changement de race; vente de veaux de viande;*
1,8	Motivation for those choices	
1,9	Most like in the job	*Travaile très varié et c'est ça qui me plait, pouvoir faire de tout sans que ce soit trop répétitif.*
1, dix	Less liked in the job	*Certaines choses qd elles sont trop répétitives.*
1,11	Good cow?	*robuste, qui vêle bien et élève bien son veau.*
1,12	Same idea before the program?	*Tjrs la même vision en ce qui conerne les VA ms pour les VL il ne fallait pas qu'elle ait de soucis sanitaire et pareil, faire un veau.*
Grazing System		
2,1	Said around about GS	*pas beaucoup.*
2,2	What did you think about it in the past?	*"une vache est mieux à pâturer", tjrs pensé ça.*
2,3	And today?	
2,4	Limits for GS	*Surface trop petite ("si j'avais 130 ha, je me mettrai en 100% herbe")*
2,5	Advantages for GS	*Volonte (?)*
System's sustainability		
3,1 et 3,2	Evolution of working conditions?Why?	*Travail beaucoup moins car qd vaches dehors et clôtures faites, il n'y a plus rien à faire!; eau partout dc gain de temps; aimerais bien travailler plus though….;*
3,3 et 3,4	Evolution of income? Why?	*a augmenter depuis 2006 et ne se plaint pas (ms seulement +/- 730 € /UTH dc aimerais bien un peu plus quand même : partir plus en vacances…); pas beaucoup de dépenses et très économe dc pour ça que revenu sufiit à peu prés; mais avec emprunts à rembourser*
3,5	Thoughts on the sustainability?	*primes; avant bonnes DPU (500 € /ha) mais avec la nouvelles PAC, va être revues à la baisse, donc cela va-t-il continuer à être rentable*
3,6	What is autonomy?	*autonomie fourragère = "pas assez de terres donc doit acheter du fourrage"*
3,7	Autonomy and your farm	*Manque de terres donc souhaite s'agrandir ou partir*
Training program		
4,1	How did you knew about the program?	*Gérard (?) et vu grâce à la Chambre d'Agri*
4,2	Knew CIVAM network before?	*Non, pas du milieu donc ne conaissait pas*
4,3	Discoveries in the network	*toutes les autres formations qui s'y faisait; très impliqué dans les Civam*
4,4	Goals and motivation when started the program?	*Parceque devait faire ses heures; acquérir des conaissances techniques; optimiser son pâturage*
4,5	Goal reached?	*Oui, qq connaissances techniques sur la technique du pâturage*
4,6	Thinking evolution?	*Avant semait du TB-RGA et maintenant essaye d'autres espèces*
4,7	4,7,1	

	4,7,2	*Paddocks déjà +/- bien calés, fait pâturer ras, a remis des clôtures mobiles pour refaire qq paddocks*
	4,7,3	
4,8	What you got is what you though you'll get?	*Oui, est venu, a pris ce qu'il en voulait, et est reparti*
4,9	Worth keeping in the program	*Voir d'autres systèmes sans maïs; autres types d'espèces; innover un peu dans les espèces semées (eg. Méteil); bcp de comparaison avec les grosses fermes dc pas toujours comparable avec son cas*
4,dix	Should change?	*Mélanger VA et VL pas de pb car 5 producteurs ds le groupe; peut-être faire une demi-journée individuelle sur les exploitations de chacuns afin de vraiment voir comment mettre en place concrétment les choses dites en journées chez les autres; besoin d'un technicien*
4,11	How further accompany the farmers?	*Pas besoin de suivi pour son cas*
5,7 - fusionner avec question 4,11	What should the CIVAM do?	*Il ne faut pas hésiter à prendre des virage radicaux, moins se poser des questions, moins penser ("penser ça embrouille le cerveau!")*
4,12	Gain anything not related to the job?	*Pas forcement*
4,13	Follow other similar training program?	*Qq journées techniques mais pas dans le Civam*
4,15	Where do you fond your farming education?	*Aucun (revues?); dégagé le conseiller agricole car pas performant*
Summary and future perspectives		
5,1	Main steps in your career	*Diminution du maïs, augmentation de la surface en herbe; changement de race*
5,2	Why?	*Volonté de laisser les vaches dehors; décision d'être herbager*
5,3	Other persons involoved in the decision making process?	*Avec sa femmes; pas toujours facile ("on s'engueule et après on discute"); mais pas entourés ni conseillés par l'extérieur donc, théoriquement, aucuns freins au changement ou à l'évolution*
5,4	Main sources of satisfaction	*Première pensée: famille = enfants dc réussite; ventes des veaux au Cadran (~prestigieux et en tire un bon prix dc beaux veaux*
5,5	Failures?	*Manque de revenu; aimerais travailler plus ; pas assez de terres; pas intégrés socialement dans le coin*
5,6	Advice for a neo-grazer	*Dépends du système en place avant*
5,7	Farm in 10 yrs	*Plus grande, tt herbe*
5,8	Dream farm in 10 yrs	*?*

Appendix 6: Sample of the second step of data analysis, table 2: multiple indicators table

Interviewees					3 - S. M.	4 - F. G.
Who is she/he?	Age	< 25 yrs				
		25 - 35				X
		35 - 50			X	
		> 50				
	Date of settlement				1995	2007
	Background	Farming background				X
		Non farming background			X	
	Work experiences before settlement	Non farming related			X	X
		Farmin related	0			
			< 1 yr			
			1 to 5			X
			5 to 10			
			> 10			
What does she/he have?	Main production	Before			VL	VL
		After			VL	VL
	Other Production	Before			VA, brebis, porcs	0
		After			0	0
	Nb of worker	Before			2	2
		After			2	1
	Organic system before	yes			X	X
		in conversion				
		no				
	Organic system after	**yes**			X	X
		in conversion				
		no				
	Farm previous owner	family			X	X
		other				
	Historical system	GS			X	X
		intermediate				
		Intensive				
	Settling investment	high			X	
		medium				
		low				X
	Farming surface area/worker	**< 50**				
		50-70			X	X
		70-100				
		> 100				
		Ha (number)			50	65
		Total (ha)			100	65
	Head of cattle/ha	> 1,5			X	
		1 - 1,5				
		< 1				X
		increased			X	
		decreased				
		Stable				

	production	L/DC/yr	before		4 200	6 000
			after		4 200	6 500
		Nb of mother cow	before		0	?
			after		0	35
	Nb of head		before		18	?
			after		23	35
	Soil occupation	**% of corn within the farming surface area today**	**0**			
			< 10 %		X	X
			10 - 30%			
			> 30 %			
			Ha		7	6
		% other forage cultures within the FSA today	**0**			
			< 10 %			X
			10 - 30%		X	
			> 30 %			
			Ha		15	3
		% total forage cultures within the FSA today	**0**			
			< 10%			
			10 - 30%		X	X
			> 30%			
			Ha		22	9
		% grassland within the FSA today	**> 85%**			X
			85 - 75		X	
			75 - 65			
			< 65%			
			Ha		78	56
	Advantages for GS	**accessible grazing surface area/head**				
		grouped land				X
		good land				X
		efficient breed				
		Farmer's motivation			X	X
		Other				
	Limitations for GS	**None**				
		Scattered land			X	
		roads/ways			X	
		Climate change				
		land				X
		low accessible grazing area			X	
		small FSA				X
		other				
what she/he's doing	Things implemented for GS	**after the program**	**paddocks**			X
			fences, water networks, etc.			X
			stop or strong reduction of silage corn			
			medium or low reduction of silage corn			
			new grass species			
			care of the pastures (manure, etc.)			X

			close the silage pile			
			rotational grazing with one herd		X	
			graze to the ground			X
			other			
	Time with 100% grazing in the ration (or mostly complemented with hay)	Non			X	
		< 2 months				
		2 - 3 months				
		3 - 6 months				X
		> 6 months				
	Evolutions of grassland surface area since the settlement	increase				
		stable			X	X
		decrease				
	Forage autonomy	nothing bought outside the farm				
		nitrogen fixator bought			X	X
		high protein feed bought			X	
		big forage bought				
		other				
	Working conditions evolution	worst	construction work		X	
			less workforce			X
			other			
		better	new buildings			X
			drop one production			
			increase grazing period			
			more work force			
			Implementation of a GS			
			other			
		stable				
	Income evolution	worst	non farm-management based causes	drought		
				market price		
				other		
			farm management causes	investment	X	
				production decrease		
				other		
		better	non farm-management based causes			
			farm management causes	conversion to organic farming		
				decrease of expenses		X
				Production increase		
				other		
		Stable			X	
What she/he is thinking						
	Spontaneous discussion about GS	oui			X	X
		non				
	Holistic view of the	oui			X	X

	system	non				
	Attitude towards GS today	**entousiastic**				X
		money influence			X	
		neutral				
		negative				
	Motivations for GS	**Today**	**Environmental**			X
			Economical			X
			Keep out of the global system			
			Social			X
			Other		X (mauvaises terres à maïs)	
	Today's goals	**Increase production**				
		Forage autonomy				
		More free time			X	X
		More efficient work environment			X	
		Increase income			X	
		Keep or deepen the GS				X
		Partnership/hire				X
		Get bigger				
		Realize the quota				
		Diversification				
		Other				
	Goals at the beginning of the program	Curiosity				
		Technique on grass pdt°				X
		Increase grazing			X	
		Realize savings				
		Less pollution				
		Chart respect				
		Other				
	Like the best in the job	**Caring for the livestock**				
		Milking				
		Cereals				
		Grass management				
		Produce lots of milk				
		Being outdoors				
		Everything				
		Other				

Appendix 7: Indicators for the classification BEFORE the training program

Organic System	Yes	
	In conversion	
	No	
Number of head/ha	> 1,5	
	1 - 1,5	
	< 1	
Mean production/dairy cow/year (L)	> 8 000	
	7 000 - 7 900	
	6 000 - 6 900	
	5 000 - 5 900	
	< 5 000	
% fodder cultures in the farming soil occupation	0%	
	< 10%	
	10-30%	
	> 30%	
% grassland in the farming soil occupation	> 85%	
	85-75%	
	75-65%	
	< 65%	
Time of year when the silage pile is closed	> 4 months	
	3 - 4 months	
	1- 2 months	
	< 1 month	
	none	

Appendix 8: Indicators for the classification AFTER the training program

Organic System	Yes	
	In conversion	
	No	
Historical system	GS	
	Medium	
	Intensive	
Number of head/ha	> 1,5	
	1 - 1,5	
	< 1	
Mean production/dairy cow/year (L)	> 8 000	
	7 000 - 7 900	
	6 000 - 6 900	
	5 000 - 5 900	
	< 5 000	
% corn culture in the farming soil occupation	0%	
	< 10 %	
	10 - 30%	
	> 30 %	
% other fodder cultures in the farming soil occupation	0%	
	< 10%	
	10-30%	
	> 30%	
% grassland in the farming soil occupation	> 85%	
	85-75%	
	75-65%	
	< 65%	
Time of year with 100% grazing (or mostly complemented with hay)	> 6 months	
	3 - 6 months	
	2 - 3 months	
	< 2 months	
	none	
Evolution of grassland surface area in the FSO	Increased	
	Stable	
	Decreased	
Spontaneaous talk about GS	Yes	
	No	
Attitude and motivations towards GS	Enthousastic	
	Economical/time gain	
	Staying out of the system	
	Neutral	
	Negative	
Goals	Increase pdt°	
	Feed self-sufficiency	
	More free time	
	Work efficiency	
	Increase income	
	Maintain or develop GS	
	Partnership/hire	
	Increase farm size	
	Reach quota	
	Diversified	
Main steps	Towards GS	
	Against GS	
Herd's ration	Corn silage (in winter)	0%
		< 30%
		30-50%
		> 50%
	High-protein feed	All year round
		Stop when grazing
		Never
	Grazing period	< 6 months
		> 6 months
	Two main winter forages	Hay
		Corn silage
		Grass silage
		Haylage
Followed the training program	Continued after the 2 yrs	
	Until the end	
	Stoped before the end	

Appendix 9: Characteristics of each of the 5 farmers' profile found in the training program

		VGB – 5/22	GB – 4/22	I – 5/22	LGB – 7/22	VLGB – 1/22
% GRASSLAND IN SOIL OCCUPATION	>85	X	X	X		
	85 – 75	X	X	X		
	75 - 65		X	X	X	
	< 65				X	X
% FORAGE CULTURES IN S.O	0	X				
	< 10	X	X			
	10 – 30		X	X	X	
	>30				X	X
PRODUCTION : L/DC/yr	Mother Cow	X	X			
	< 5 000	X	X			
	5 000 – 6 000	X	X			
	6 000 – 7 000	X	X	X		
	7 000 – 8 000		X	X	X	
	> 8 000				X	X
	> 4	X	X			

SILAGE PILE CLOSURE (months)	3 to 4	X	X			
	1 to 2		X	X		
	< 1			X	X	
	0				X	X
SYSTEM	O rganic	X				
	In conversion	X	X			
	Conventional			X	X	X
HEAD/Ha	< 1	X	X	X	X	
	1 – 1.5	X	X	X	X	
	> 1.5				X	X

Appendix 10: Data table for establishing the trainees profile at the enrollment time

				Trainee
System	Main production			
	Other productions			
	Organic system	yes		
		in conversion		
		no		
Farm system	Farming land area			
	Head/hectare	> 1,5		
		1 - 1,5		
		< 1		
	Production	Dairy	> 8 000	
			7 000 - 8 000	
			6 000 - 7 000	
			5 000 - 6 000	
			< 5 000	
		Meat	Nb of mother cows/employee	
	Soil Occupation	% corn in the SO today	0	
			< 10 %	
			10 - 30%	
			> 30 %	
			Ha (number)	
		% other fodder in the FSO today	0	
			< 10 %	

			10 - 30%	
			> 30 %	
			Ha (number)	
		% grassland in the SO today	> 85%	
			85 - 75	
			75 - 65	
			< 65%	
			Ha (number)	
	Grazing surface area (% SO)		> 70	
			70 - 50	
			50 -30	
			30 - 10	
			< 10	
	Main limits to a grazing system		None	
			Reduced grazing surface area	
			road/other transports access	
			Fractioned fram land	
			Soil (dry, too humid, …)	
			Other	
Thinking	Caracteristics of grazing system		paddocks + size	
			Close the silage pile	
			Other	
			None	
	Motivation for signing up for the program		Acquire a technique/method about grass production	

		Increase grazing	
		Chart respect	
		Animal feed autonomy	
		Curiosity	
		Other	
	Futur goals	Of productivity	
		About working condition	
		Other	

This table regroups main indicators, divided in three parts:

- **System**: as seen when building up the typology, the beef operations are more susceptible to farm with grazing systems that dairy farms. Similarly, the fact the system is already converted to organic farming can give a first indication concerning the importance of grass in the system.
- **Farm system**: this part gives an idea about the profile of the farm and therefore about the amounts of the changes the trainee would have to operate if her/his goal is to implement a grazing system. In this part the colors used, as in the typology, allow to operate a quick and clear first classification of the trainees. The red/orange colors therefore show a non-grass based system while the green colors shox the opposite. As for the colorless indicators, they are use to refine and complete the information for every system. For example the indicator “main limits to a grazing system” is use to determine every farm’s potential for implementing and strengthening a grazing system.
- **Thinking:** this last part allows the understanding of the trainees’s motivation and goals in order to measure until where the farmer is willing to go into the grazing system and if her/his goals match what the training program can offer. It is true that sometimes when the program is not 100% efficient it might be due to goals that are different and not clearly stated at the beginning.