



## **Farming systems and good farming practices in cattle husbandry in France : the impact of a Charter of Good Practices.**

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### **Abstract**

The aim of this paper is to promote an understanding of the main environmental and social issues in cattle husbandry in France, and of the regulations or schemes which aim at improving farming practices. Firstly, this paper describes the most common farming systems in cattle production (dairy and beef) in France. For each system it emphasizes the most common environmental or social issues. Secondly, it briefly describes how the European and national regulations, as well as the cross compliance systems, are implemented in France and their impact on farming practices. Finally it highlights a professional quality scheme, the Charter of Good Practices in Cattle Farming, which aims at improving farming practices and their traceability. This paper presents the content of the Charter and then proposes an evaluation of its impact. The resources devoted to the Charter enabled 125 000 farmers to be involved in this scheme (but the smallest farms were less involved). The level of management of each practice is more difficult to quantify. The evaluation and monitoring of the charter shows that the practices where the improvements were the most important are also the ones where there is still progresses to be made. This said, the Charter constitutes an efficient way to help farmers to comply with Cross Compliance and Hygiene Regulations. The new environmental issues could lead to an inclusion of more environmental practices in the Charter.

## Introduction

It is now usual to explain that the general public expectations regarding rural development, environmental protection, biodiversity and landscape management, animal welfare ... define specific functions for farmers. French cattle farmers are especially concerned by these issues. Their contributions to these functions have a great impact on the management of grasslands and landscapes, on regional development and on agri-touristic activities. In some intensive areas, cattle farmers are also responsible for the negative impact on the environment, especially on water quality. Energy consumption and greenhouse gas production constitute new challenging issues to which grassland systems offer interesting solutions.

In this paper we present the situation of the different French areas with regard to environmental issues, describe the way environment regulations are implemented and present a professional tool to help farmers to improve their practices : the Charter of Good Practices in Cattle Farming. The Charter has been developed by farming organisations to help all farmers to improve their practices, in different areas including environmental protection.

### **1. Diversity of cattle farming systems, their environmental and social issues**

Despite the decrease of the number of the French cattle farms since the 70's (Perrot et al 2005) cattle farming remains an essential part of French agriculture and of the country as a whole. About 180,000 "professional" cattle farmers raising more than 5 cows share roughly 60% of the French agricultural surface (ie 35% of the whole territory). Half of these surfaces are made up of grasslands.

For more than 40 years, the political, economic and environmental regulations have contributed to homogenize market conditions, prices and subsidies for all farmers. Intensification, specialisation and enlargement of structures have been the dominant features of this period.

Nevertheless French cattle farming is still characterized by high diversity, which persists in spite of the common regulations, because cattle farming systems are still very much linked to natural conditions and to local culture and history.

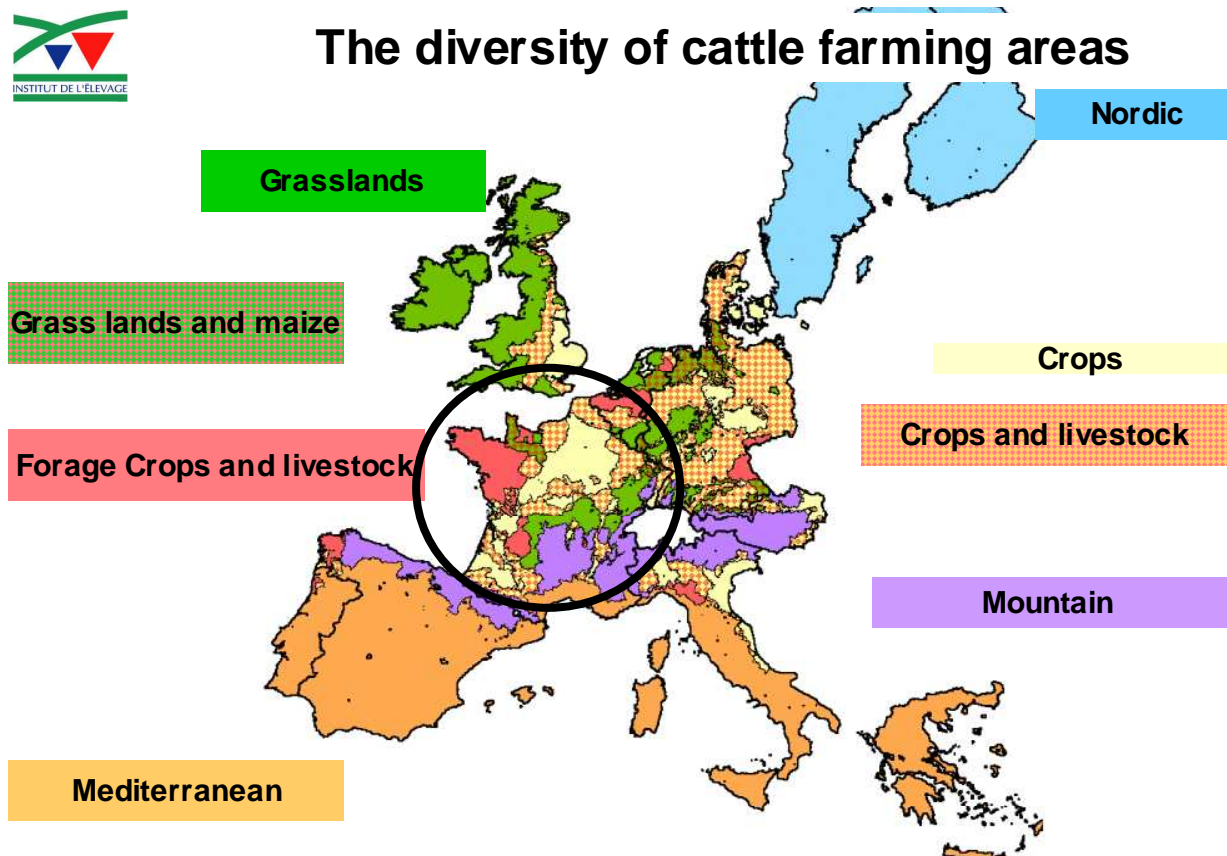
Firstly the diversity of the cattle farming systems can be categorized by size, by combination of productions and by forage systems :

- About 30,000 part-time farms raise fewer than 5 cows or fewer than 8 animals. They only use 3% of the surface area and produce an insignificant part of the animals. But their number is rather important especially in some areas, even if it is rapidly decreasing.
- 90,000 dairy farms (or mixed dairy and beef farms), with an average production of roughly 250,000 kg milk/year and 1.7 full-time jobs per farm. The beef production can be made from the dairy cattle or from a specific beef herd. Dairy production is often also associated with crops and sometimes other animals. Among dairy farms, the forage systems are diverse :
  - o the maize and grassland systems (with from 10 to 50% of maize) are the most frequent (70% of the farms);
  - o the grassland systems in the flatlands only represent 12% of the farms, with a rapid decline amongst smaller farms and older farmers;
  - o the hills and mountain production, with grassland forage systems and often quality products represent about 13% of the farms.

- 90,000 beef farms can be analysed through their main productions :
  - o about 65,000 farms specialize in suckler cow production, mainly exported to other regions in France or more often to Italy or Spain. The fattening activity is limited to some females. The forage system is based on grasslands. The cattle are sometimes associated with sheep. Some of these farms are more crop farms with a diversification in suckler cows ;
  - o about 20,000 breeding and fattening farms, producing store and fattened females from the cows of the farms, with grass and maize forage systems ;
  - o about 5,000 fattening farms, with no cows, producing either veal calves, or store cattler from cereals or maize silage. A few farms are producing steers from pastures.

Secondly, Pflimlin and Perrot (2005) suggest structuring this diversity through a zoning approach. They defined eight cattle farming zones over the Europe 15 of which seven are present in France. Obviously France is a diverse country, but also the criteria used for the zoning are well adapted to French specificities and the zoning is more relevant to describe the cattle farming situation in France than in the Baltic or Mediterranean countries, which will be redefined in 2009.

Each zone is characterized by land use, specific farming systems and issues for farmers. Cattle production is scarce in crop and Mediterranean areas, thus we will focus our presentation on the 5 remaining zones. The map below shows their spatial distribution in the Europe 15. Table 1 summarizes the main technical and environmental characteristics of the zones.




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Source : Eurostat – Structure Census 2000 adapted by the French Livestock Institute

**Map1 : The main cattle farming areas throughout Europe 15. Pflimlin, Buzinski, Perrot, 2005**

	<p><b>The crop and livestock areas</b> are mainly situated in the flatlands. As there are possibilities of enlargement of the structures, dairy farmers are confronted with competition between animal and crop farming, for working load and economic reasons. Beef farmers often specialize in fattening through the use of their own cereal productions, or in suckler cows on their permanent grasslands. The farmers face environmental issues which are not really connected to cattle production (water pollution due to mineral fertilizers, lack of biodiversity and a rather monotonous landscape). Livestock production is mainly an asset for the landscape, the biodiversity and the environment of these areas, as it uses the remaining permanent grassland areas. The combination of crops and livestock production enables a good use of the animal fertilizers and a rather steady income for the farmers.</p>
	<p><b>The forage crop and livestock areas</b> are situated mainly in the west of France : Brittany...). Animal farms, and especially cattle farms are dominant in these areas. The medium-sized farming structures rely on intensive forage systems, with temporary grasslands and maize for silage playing an important role. The historical enclosed landscape is more or less preserved. The main environmental issues are linked to the high organic pressures due to intensive animal productions (including pig and poultry), in regions with sensitive to leaching soils and a high level of annual crops. Many collective regulations and advisory operations have been implemented and carried out for about fifteen years to improve the water quality. They are just now beginning to produce results.</p>
	<p><b>The grassland and maize areas are mainly found in Normandy</b> (North West of France). Rather small sized farms associate dairy and meat production, often with mixed breeds and a rather high level of intensification due to the combination of the 2 productions. The proportion of the surface devoted to maize production is slowly increasing in relation to farm size growth. This evolution could lead to some changes in the landscape and to a decrease in biodiversity. However, permanent grassland remains the main forage even if it is more and more under pressure to be turned into maize or cereals.</p>
	<p><b>The grassland areas</b>, where permanent grasslands account for more than 60% or even 80% of the surface. Beef production is dominant in the north Massif Central (Limousin, Charolais), mainly oriented towards extensive suckling cows and store cattle production. In the other grassland areas (East of France), dairy and beef production is present, often on the same farms. Grasslands, hedges, dominate the landscape. Water quality is preserved through the low stock yield and the pastures. There are no main environmental issues either for water or air as the pastures stock a large amount of carbon. But the weaknesses of these regions are the scarcity of local jobs and the export of most of the weaned calves. .</p>



	<p><b>The mountain areas</b> are characterized by a combination of high quality dairy products and tourism activities. The size of the farms is rather small with a dominance of permanent pastures (often over 80% of the surface). Grazing contributes to the management of difficult areas and slopes. When the quality products allow a high milk price (Jura, North of Alps) dairy production is still dynamic. In the Massif Central beef production based on rustic breeds on rather large farms are increasingly dominant. The main risks for these areas is the diminishing of the number of farmers or of cows as animal farming contributes to the construction of the landscape and so to tourism.</p>
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**Table 1 : the main technical and environmental characteristics of the cattle farming zones.**

Zone	% of permanent grassland	Dominant livestock system	Level of input / ha	Specific products	Contribution to environment			
					Water	Biodiversity, Landscape	Air	Energy consumption
Crops and livestock	23%	Crops and milk	High	Rare	-	+/-	-	High
Forage crops and livestock	25%	Dairy and beef, pigs	high	Rare	--	+/-	--	High
Grasslands and Maize	52%	Dairy and beef	Medium	Medium	+/-	+	-	Medium
Grasslands	72%	Suckling cows (milk)	Low	Medium	++	++	+	Medium/low
Mountains	75%	Dairy (suckling)	Low	High	++	+++	+	Medium

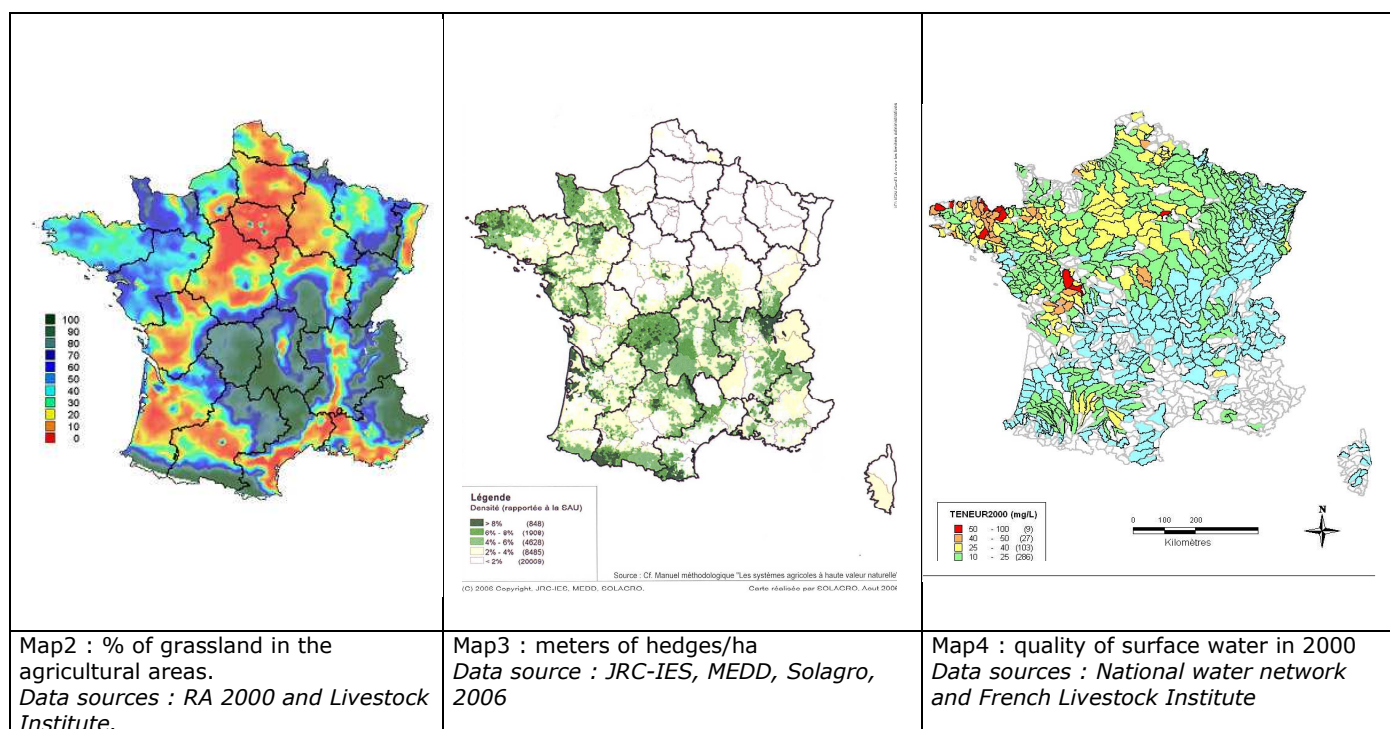
+, ++, +++ : positive impact

-, -- : negative impact

*Data sources : FSS 2000 Eurostat, adapted by the French Livestock Institute*

Globally, the main environmental aspects are linked to the extent of the grasslands, especially permanent grassland, in the agricultural areas. The maps above show the links between the percentage of grassland, and the quality of the water and the biodiversity : permanent grasslands are often linked to hedges and both are favourable to biodiversity. Beyond these aspects there is also a link between the consumption of energy and the role of grasslands in the forage system, mainly due to the more limited use of mineral fertilizers oil-based in the grassland systems. For example, in the National Farm Network of the French Livestock Institute and the Chambers of Agriculture, the necessary energy to produce 1000 kg of milk is about 80 F Eq (fuel equivalent) in the forage crops and grassland systems and about 60 F eq in the organic or grassland systems.

The case of Brittany (west of France) is interesting to focus on. The high organic pressure, due to the high density of livestock, including pigs and poultry, have had consequences on the quality of water for more than 20 years, despite the temporary grasslands and the presence of hedges. We will see further that the regulations and advisory operations have had positive results and that water quality is slowly improving in the region.



## 2. The impact of environmental regulation on cattle farming systems : some real improvement in the practices

Since 2005, all animal farms have been affected by a complex regulatory system, combining national and European specifications and monitoring has been increasingly organised in accordance to the cross compliance system. The French Livestock Institute (Le Gall et al 2005) has studied the potential impacts of these rules on the different cattle systems. For the moment the environmental regulations mainly concern water protection (Nitrates directive, Water Framework directive), biodiversity (Natura 2000) and soil protection (Good Agri-Environmental Conditions).

### 2.1- Water protection : more regulations (and problems) on the larger farms and in vulnerable areas.

Roughly we can identify two levels of regulation :

- one concerning on the one hand all the "vulnerable zones" in which the nitrate directive is implemented, and on the other hand the biggest farms (more than 50 dairy cows or 100 suckler cows) which have to comply with specific regulations as they are considered to be "classified installations";
- one concerning the other farms (smaller and not in vulnerable zones).

Dairy cattle farming is particularly affected by the respect of the Nitrates directive (table 2). Indeed, all the intensive areas are located in the "vulnerable areas" in which the regulation has to be complied with. Thus 60 % of dairy farms and 35 % of beef farms are affected by this directive. One of the most restrictive aspects of this regulation is the maximum amount of 170 kg of organic nitrogen per hectare. This limit is a problem for about 10% of dairy farms and 4% of suckling farms, which are mainly located in the west of France and combining cattle and pig or poultry production. On the other hand, we can see that a

majority of the cattle farmers are far below this limit with less than 100 kg N/ha, mainly in the crop and livestock, grassland and mountain areas.

	Dairy farm	Suckling farms	Fattening farms
% of farms in vulnerable areas	60	35	55
% of farms over 170 kg N/ha	10	4	8
% of farms under 100 kg N/ha	60	75	70

**Tableau 2** Cattle farms and nitrate directive (Data source Rica et Scees, 2001)

The requirements of the Nitrates Directive and of the national regulation on “classified installations” (larger farms) relating to the creation of storage facilities and to manure and fertiliser management, are designed to contribute to the improvement of quality of water. The cost of installing larger storage facilities would be about 850 € per dairy cow and 510 € per suckling cow, with wide variations around these figures. A national subsidy program has existed since 1992 to help farmers bear these costs (15% to 25% of subsidies/ total costs).

The cost of these investments can be too high for the smallest farms or for the oldest farmers who sometimes prefer to stop animal production rather than build new buildings or new manure storage systems.

This high level of regulation also requires the implementation of a balanced fertilization, with a provisional definition of the organic and mineral fertilizers, consistent with the needs of the crops, and with a recording of the practices in a fertilization log. This has no specific cost for farmers and can even lead to a reduction in the cost of mineral fertilizers. But it has involved a change of the habits and practices of the farmers, which today is nearly complete. Thus, the nitrogen balance of the dairy farms in the west of France has diminished of more than 50% over the last 15 years (from more than 200 uN in surplus to less than 100), with the same stocking rate (1.8 CU/ha), and a two third reduction of the use of mineral fertilizers. Consequently, there has been a real decrease of the nitrate level in the rivers of the west of France between 1990 and 2005 whereas it is still increasing in the crop areas (Medad and Oiseau 2007). The situation still needs improving but progress has been made.

## 2.2 Biodiversity : many advantages produced by cattle farming systems.

Cross compliance and national regulations about biodiversity mainly concern « Natura 2000 » areas, which cover about 10% of the national territory. The areas concerned are mainly situated in the coastal areas, in the mountains and in the wetlands. Suckling systems and mountain dairy systems are the most affected, but the constraints are not really a burden on the farmers who already have rather protective practices. In the areas concerned, cattle farms produce a landscape of pastures and hedges rather favourable to biodiversity.

Globally in France three situations can be described :

- **Forage crop areas**, where farming practices have often led to poorer biodiversity, but where grasslands, hedges and banks are still present (for instance 120 m of hedges /ha in West-Brittany, but only 20 m/ha in the areas where they have been the most widely destroyed, Perichon, 2003). Hedge planting projects are presently being implemented in these regions.
- **Grassland areas and mountain areas** with a high biodiversity as seen above. The economic difficulties of farmers could lead to an increase in the forest surfaces or to abandonment of some difficult slopes in the mountains.
- **Crop and livestock areas**, where most of the the biodiversity is linked to cattle productions.

Finally, cattle production systems have more advantages than drawbacks as far as biodiversity is concerned. What is more, grassland is often associated with the good quality of the landscape and the products.

### **2.3- GAEC: more or less consistent regulations for soil and water protection.**

Cross compliance Good Agri-Environmental Conditions (GAEC) aim at limiting erosion and protecting soils :

- the obligation to keep 3% of the crop surfaces in grass strips near the rivers is also effective in reducing pesticide and fertilizer transfers to water. It is not a real constraint for the cattle farmer as grasslands can be counted as grass strips (if they are on the river banks).
- the obligation to have diverse production aims at keeping a sufficient level of organic matter in the soil and at limiting the presence of bare soils during the winter. It is not a constraint for cattle farmers, who usually have different productions when they have crops.
- the ban of straw burning after the harvest is obviously not a problem for animal farmers, who use the straw for the cattle bedding and even sometimes need to buy some.in
- the protection of the permanent grassland is clearly important for environment as we have seen throughout this chapter. But it's obviously a real problem for some farmers because of the high price of cereals (which can be more profitable) and because of the growth of the size of the farms. Better land organisation could help farmers to maintain grazing on bigger farms.

So GAEC can't be considered to be real constraint for cattle farmers and some of them can be useful to protect soil and water. The obligation to protect grasslands is a stronger constraint and isn't always consistent with the economic opportunity for farmers to grow more cereals. But it is clearly an environmental benefit. Farmers have to be supported, technically and financially, to maintain, develop and optimize the use of their grasslands.

### **2.4. Cross compliance controls : an view of the implementation of the regulations**

Every year since 2005 the national administration has monitored cross compliance regulations on farms (Ministry of Agriculture 2007). For example in 2006, 28 400 controls were carried out of which 14% led to a cut in the farm subsidies. 60% of the controls and 68% of the penalties concerned cattle identification (a rather well implemented regulation, yet easy to check).

About 10% of the controls and the penalties concerned the environmental directives, and about the same number the GAEC. The main problems observed were :

- an insufficient recording of fertilizer use ;
- an insufficient management of the set aside areas or grasslands.

In fact the control are made on what is easy to control (animal identification, fertilizer pads ...) rather than on the main environmental issues.



### **3- To advise farmers on good practices : the Charter of Good Practices in Cattle Farming.**

The Charter of Good Practices in Cattle Farming was created in 1999 by the National Livestock Confederation (farming unions), in the context of the second mad cow disease crisis. It aims at improving farming practices, mainly their traceability, and at making the farming profession better known by the general public. The motto of the Charter "doing well and making it known" illustrates these two general objectives of the scheme.

The Charter is now supported by 125 000 farmers, which makes it the largest quality scheme in Europe. The French Livestock Institute has been involved in the implementation and the follow-up of this scheme from its beginning (Dockès et al 2006). The evaluation of the Charter and the modifications in the regulatory system has led to changes in the content and the organisation of the Charter. Thus the third version of the Charter, reinforced in the areas of the environment and hygiene was launched in 2007 in order to help the farmers adapt to the new cross compliance system and the new hygiene regulations.

#### **3.1- Content and organisation of the Charter :**

The charter defines 47 "good practices" and is organised into 7 chapters written as farmer commitments:

- To guarantee a perfect traceability of my animals, I assure their identification as required by current regulations;
- Out of respect for human health and for my animals, I ensure the good health of my herd ;
- For the consumer and for my animal's health I give my animals a safe and balanced feed, of guaranteed origin;
- For the quality of the milk I sell, I guarantee the hygiene of my production ;
- Out of respect for my animals I provide them with good welfare conditions ;
- For their hygiene and comfort I ensure good living conditions for my calves ;
- I contribute to environmental protection.

When he intends to join the Charter and every two years thereafter, a farmer requests for a audit visit made by an advisor from an extension or food chain organisation. The advisor assesses each practice and compares it to the objectives of the Charter. For each practice, three levels have been defined :

- the "excellent" practice, which is the best practice every farmer is supposed to reach;
- the "acceptable" practice which is possible within the Charter but where progress is still to be made to reach the "excellent" level
- the "ineligible" level below which it is impossible to adhere to the Charter.

To comply with the Charter all the practices have to be "acceptable", but not necessarily "excellent". Progress can be progressively made.

To be authorised to audit charters, advisors have to follow specific training courses every year. Their organisation undertake to give all the necessary information to the regional and national organisation levels of the Charter.

The regional and national organisation is in charge of the content of the Charter, of the training of the technicians and of the follow-up of all the scheme. A monitoring system, relying on internal and external evaluations and audits has been implemented.

### 3.2- Main impacts of the Charter

The monitoring systems, based on a control board, and on internal and external audits enables the follow-up of a set of indicators concerning the resources involved in the scheme, and the results and impact of the Charter.

**Some important resources are devoted to the Charter :** Globally, 3 million euros of subsidies are devoted to the Charter every year to support the organisation of the scheme and the carrying out of the visits (the equivalent of 24 euros per farm involved in the scheme). The global cost is estimated at 14 million euros a year. More than 3,000 people are involved in the scheme for an equivalent of 150 full time jobs. 2/3 of this time is devoted to the visits to the farmers and 1/3 to the coordination of the scheme (the equivalent of 0.24 day par farm in total).

**Some tangible results but still some progress to be made with the smallest farms :** The commitment to the Charter can nowadays be considered as a professional rule. A comparison between the database of the farmer adopting Charter and the national database of all farmers is made by the French Livestock Institute every year and enables us to see who is or is not involved in the scheme. .

Figure 1 below presents the evolution of the number of farmers in the Charter over the last few years according to the profile of the farmers.

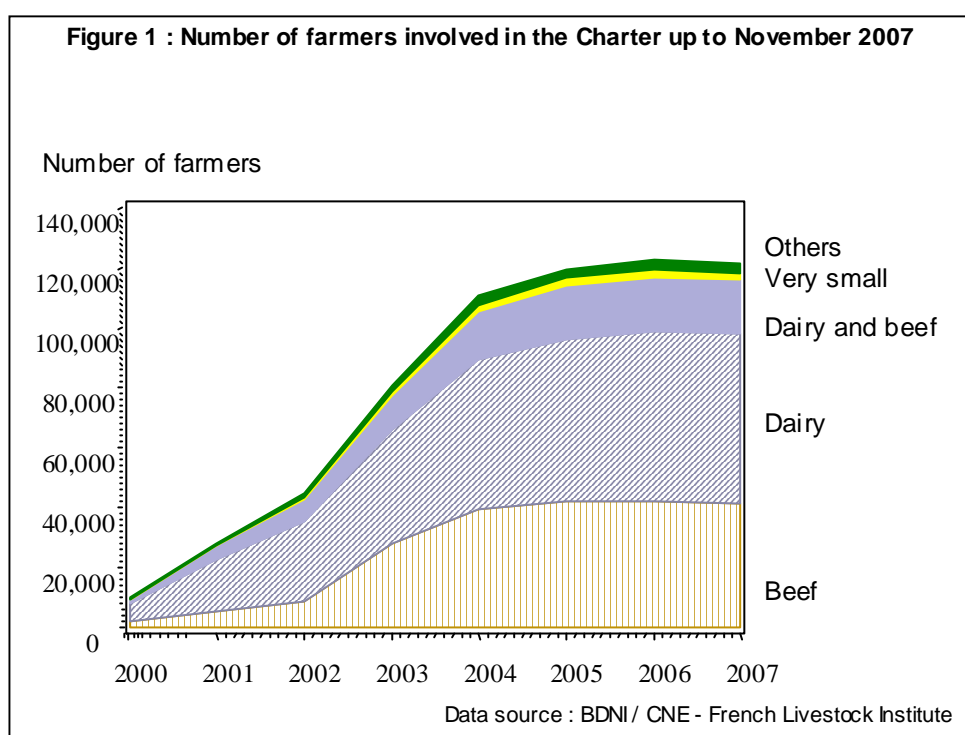


Figure 1 shows that smallest farms (fewer than 5 cows or 8 animals), who number approximately 30,000 are hardly involved at all in the Charter. They are usually not known by the extension services nor by the food chain industry and don't feel concerned by the regulations. In any case their impact on the food production or on the land use is very modest. But the low level of involvement (35%) of the farmer who raise fewer than 20 cows is a more important problem for the scheme. Above this herd size most of the farms adhere to the Charter which concerns 125,000 farmers, 90% of the dairy cows and 75% of the suckling cows (more present in the smallest farms).

**The impact of the scheme is still difficult to assess** : the two main objectives of the Charter are to improve the **practices** of the farmers and to **make it known** by the general public.

On **the first aspect** the progress is real. The main problem at the outset of the Charter was the insufficient traceability of the products and practices (regarding environment, feed, and drugs, Dockès and Hedouin 2003). A general survey on the topic was carried out in 2006 by the French Livestock Institute. Advisors from each region were questioned about the level of application of each practice, and on the progress realised within the last 5 years. Of the 35 practices which were part of the Charter at the time, 15 were completely adopted while, 20 were acceptable, with still some progress to be made. The advisors noted that the farmers had really improved many of their practices, even if progress was still expected :

- traceability and identification of animals was acceptable, the main progress was made in the recording of the dates of the events on the farm (birth, sales ...), but there were still improvements to be made in about 15% of the farms ;
- regarding the sanitary aspects, progress was noted in more than 80% of the farms: prescriptions were more present, treatments were often recorded, which wasn't the case 5 years ago ... but about 20% of the farmers still didn't have this information and 2/3 of them didn't record each treatment or keep each prescription ;
- there were few problems concerning feeding of the animals, except for the traceability of all the bought feed, which was not exhaustive in about 50% of the farms ;
- the hygiene of the dairy production was acceptable most of the time, with progress in 80 % of farms ;
- they was little progress concerning animal welfare, but the general situation was considered to be rather good with serious big problems, except for the dehorning of the cows ;
- concerning the environmental practices, and specifically the recording and the forecasting of organic and mineral fertilization use, and the cleanliness of the farm, the progress was real in nearly 80% of the farms ... but the recording is still often incomplete (40% of the farms) or absent (10% of the farms, outside the vulnerable areas).

To sum up, the practices which were problematic in 2003 are those where the progress has been the most important ... but also where there is work still to be done. At the beginning of the Charter farmers hardly ever recorded any information about the fertilizers and the sanitary aspects. Now they nearly always collect some information, but not always all the information needed to comply with the regulations or to optimize their practices.

Few studies have been carried out on **the image of farmers** as seen by the general public. The Charter was launched during the mad cow disease crisis, when the image of the farmers was in question. Some communication events were organised to make the job of farmer better known by the general public. The Charter was not really the central theme of communication, but it enabled farmers to be proud of their collective practices and to explain their job with confidence. It is of course difficult to attribute the recent changes in general opinion to the Charter only. But a recent public opinion poll (CSA, FNPL 2007) showed that 90% of the public have a good image of cattle farmers with an improvement since 2001. Farmer are now considered to be more responsible and meticulous than they were a few years ago.

Beyond these impacts, the Charter created the opportunity to organise a network of more than 3,000 advisors from more than 700 organisations. They audit farmers every two years and discuss their practices and methods of production. Every year training and meetings are organised. This network is an useful aid to help farmers in their attempt to comply with the general public's expectations.

## Conclusion

The analysis of the main French cattle farming systems and of their impact on the environment illustrates their high diversity. In short, while cattle farming may have a real positive impact on environment when it is based on grassland forage systems, more intensive systems need to be carefully managed to avoid negative impacts on water or air. Farmers have to be very attentive to their practices.

Different subsidy and advisory operations like the Charter of Good Practices have helped them to adapt their practices and have led to real progress, but there is still room for improvement.

Over the next few years, the new context of commodity and energy prices and new environmental issues (greenhouse gases) will create new challenges : without a change in regulations and in the direct payment systems many farmers could modify their practices and productions :

- in the crop or forage crop areas they could earn more money by producing more cereals or more oilseeds and less grass or fewer animal productions, which could lead to environmental problems ;
- in the grassland areas the cost of the commodities could become unaffordable for some farmers who could stop their production. This could have a serious effect on the landscape, the local products and dynamics.

Grasslands are an obvious asset for environment in all its aspects, projects and new subsidy systems have to be set up to protect and develop their use on animal farms. Producing more animal products from permanent grasslands and using the crops to feed human beings or, at limited scale, to fill the tanks of their cars is a technical, economic and social challenge for the coming years. A new version of the Charter of Good Practices could be drawn up to take into account the changes to the environment over the next few years.

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