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*Pig farmers and multifunctionality of landscape in Midi Pyrenees:
Vanish sneakily for the right to stay in business?*

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Abstract

Midi Pyrenees is a very scenic part of France, and a popular destination for tourists since the 1970^s. In recent decades the tourists infiltrate the region more and more by buying old farm and village houses as holiday resort. The historical development of pig farming in the area has contributed directly to the conservation of the scenic small scale culture and nature landscape, which is so appreciated by locals and tourists, as well as it has created serious environmental problems. The position of pig farming represents the paradox between culture and environment.

In the 1980^s pig farming has developed as an economic carrier for the development of farm exploitations in southern France; in particular in the departments Lot, Aveyron and Tarn. The pigs fulfilled the need for an additional economic base on moderate sized farms in addition to other agriculture activities; predominantly crop farming in Aveyron and Tarn, and dairy farming in Lot. The advantage of the implementation of a pig herd was the non requirement of land. Pig farming also offered an opportunity for youngsters to become a farmer without any requirement of land. However it did not result in a sustainable situation.

The purpose of this contribution to Working Group 1 is to show the logic and reasoning of the current pig farmers in facing their actual situation. We outline their strategies and their expectations in the context of the specific environment. Based on semi-structured interviews with pig farmers we explore profoundly three themes: the significance of pig farming in the landscape, the conflicts of interests with the other actors in the neighbourhood, and the role of the resources for commercial activities. In the discussion we will show that the pig farmers do not feel recognised as positive contributors to the region and they feel excluded from its perspectives.

As it is, pig farming in Midi Pyrenees is in crisis, because pig farmers can no longer compete with the production in other, more specialised areas like Brittany, due to the higher production costs. Pig farming is therefore in rapid decline. And although some pig farmers are now reorientating on their perspectives by investigating the opportunities for multifunctional farming and special products, their future is uncertain. This does not just put (pig) farming under pressure, but it may also have extensive implications for the dynamics of the composition of structures and landscape of the region. It raises the question whether a severe decline of pig farming would really be an advantage for creating sustainability.

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Introduction

Pig farming and landscape dynamics

Intensive pig production systems are not supposed to have much impact on the physical landscape. With the pigs kept indoors, they may be thought to have no effect at all on landscape questions. And it is easy to imagine that the visible landscape is shaped by activities that use more land for field crops or forage. Our analysis will show that, paradoxically, in a region where indoor pig farming provides a significant proportion of farm incomes it is indeed one of the factors that determine landscape structure.

Context of the research

The study site: Midi Pyrenees, a region where pig farming is declining

In the 1980s, pig breeding expanded in the Midi Pyrenees region as a complement to other agricultural activities on farms that were looking for a production activity that would not require more land. It played a major role in maintaining the viability of the small structures (small farms, small fields) that characterise the region and its landscapes. Indoor pig farming was so widely adopted that the region came to be called *little Brittany*¹. That is a thing of the past, however; the number of pigs produced has been declining continuously since 1995, and since 2001/2002 the talk is of a crisis, which is further reducing the number of farmers. (Proteis+, 2005, JLR Conseil / I.D.E. Environnement, 2000).

Prices have declined over the past decade, although with fluctuations, while the cost price has remained high and has even risen. Compared to areas with specialized intensive farms producing on a large scale, as in Brittany and Spain, production costs in Midi Pyrenees are high and the infrastructure for purchasing the genetic material, feed and required technical services is unfavourable. Furthermore, farmers have to meet European environmental standards that demand heavy investments compared to farmers' incomes. If they want to increase their output in order to reduce proportional costs and restore their income levels, they often face strong opposition from the public opinion. And the gap between the price paid to the farmer and the price paid by the consumer is widening, while the public appreciation of the product and its production methods is deteriorating. Now, many farmers are no longer making any profit from their farms, farmers' capital is not increasing in value. And if they sell their farms they will get little returns for their pig housing buildings, their plant and their equipment.

This is connected with the fact that Midi Pyrenees is a *less favoured area* under the 1975 EU Directives. These refer to hills or mountain areas or those with steep slopes, low-density areas with poorly productive farmland, and areas thought to be of strategic importance to maintain farming (Daridan and Ilari, 2005; Daridan et al, 1998). Midi Pyrenees is now also much frequented by new populations including passing by tourists

¹ In this article *Brittany* refers to *French Brittany*

and foreigners buying homes in rural areas. The future of pig farming cannot be discussed without taking into account these factors and their impacts on farming.

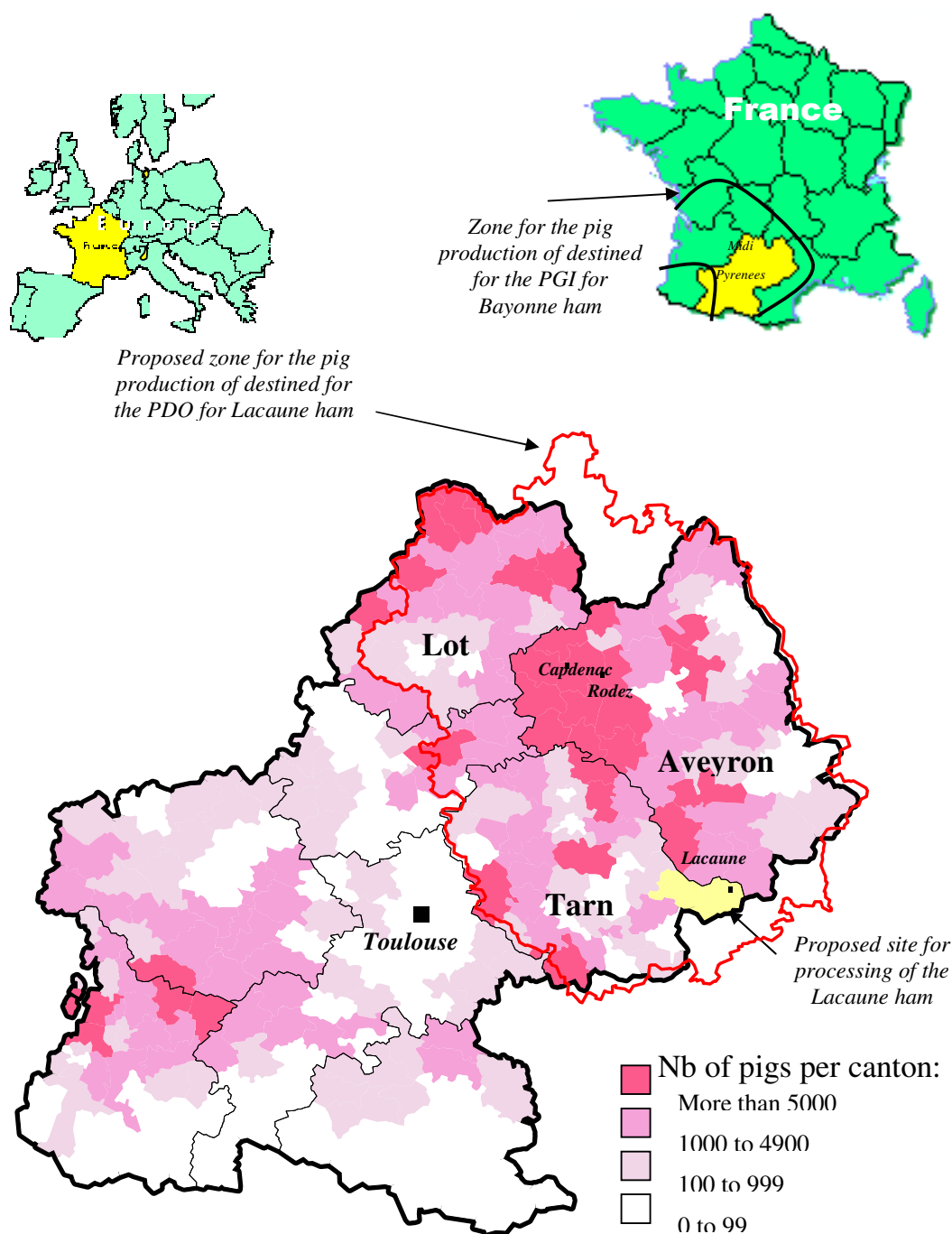


Figure 1: Numbers of pigs and proposed pig production area for Lacaune ham in the departments Lot, Aveyron and Tarn, Midi Pyrenees region, France, Europe.

Development by professionalisation

The handicaps of the three departments have different causes, correlating with the farmers' other activities. In Aveyron, the handicaps are mainly due to altitude and the steepness of the slopes, which are traditionally used to grow cereals, especially in the Ségala (the area bordering on the department Tarn). The handicaps in Tarn (cereals, cows,

beef and mutton) and especially Lot (beef and mutton) are different: poor soils and structural barriers such as river gorges (Daridan & Ilari 2005).

Historically, in the 1980s pig production developed in Midi Pyrenees using exogenous technical and scientific knowledge. Farmers' main reason for starting pig production was the difficulty of acquiring land to expand their farms. Initially, the region positioned itself to produce weaners, as this requires less initial investment than fattening. It is more labour-intensive, but labour costs were lower then than they have since become. After its initial success, pig producers gradually came to combine the farrowing with fattening. The farmers were encouraged to do so, since a combined system is more profitable (Daridan & Ilari, 2005). So far, this development followed roughly the same trend as other small-farm areas in Europe, for example in Twente and the Achterhoek in the eastern Netherlands (Commandeur, 2003). But then, the generic knowledge became *endogenised*, i.e. developed local forms as a result of local actors' initiatives. In Midi Pyrenees, for example, cooperative groups were formed to handle the farrowing stage for their members, who then took the weaners to fatten them on their own farms – a system that reduced the burden of work on *plural active* farms.



photo: Monica Commandeur, summer 2004

Photo 1: Landscape with small farms and fields, Midi Pyrenees

The process of endogenisation continues today. The present study shows one aspect of the increasing endogenisation of generic technical knowledge in the specific situation of Midi Pyrenees. It is an interesting exemplification of the endogenisation phenomenon because the process is showing marked variations within the production zone.

The product chain organisations: reconstructions and initiatives

More than 85% of the pig farmers in Midi Pyrenees are members of cooperatives. In this way they have the benefit of collective production resource supply (feed, genetic material, technical and veterinary services) and collective marketing of their slaughter pigs. By the 1980s, the producers' cooperatives were already being reorganised, or in the process of merging or (in some cases) dividing.

In Lot, various local producers' cooperatives merged until Qualiporc became almost the only cooperative in the department; about 90% of the department's pig farmers are members.

Several cooperatives operate in Tarn and Aveyron (and other departments): Rouergue Elevage (RE) and Alliance Porc Sud (APS) are the largest, followed by Porci-d'Oc and Fipso. RE and APS emerged as a division into separate cooperatives after an internal dispute about the building of a slaughterhouse in Montbozon in the 1960s. After that conflict, two slaughterhouses were built, one in Capdenac for RE and one in Rodez for APS (Figure 1). In 2004-2006 when the present survey was in progress, APS and Porci-d'Oc were seriously discussing a possible fusion, but the discussions broke off in the summer of 2006 and have not been resumed.

Qualiporc is promoting among its members to obtain the Label Rouge certificate. This is a quality label that makes no reference to the location of origin or to a particular processing system.

The initiative of developing a ham with a certificate for Protected Designation of Origin (PDO), *Lacaune Ham*, was launched by about ten farmers in Lot, Aveyron and Tarn, although the initiative is associated with the Porci-d'Oc cooperative, and particularly with its chairman, who resides in Tarn. Under this label the pigs should be slaughtered and processed in Lacaune, on the opposite side to Lot in Tarn department (Figure 1). The town of Lacaune is already known for other geographical denominations, with PDO's for Roquefort cheese and Aveyron veal. The Lacaune slaughterhouse slaughters the region's sows, and so it has the capacity to slaughter heavy pigs. This aspect is the argument for the location of the PDO for Ham.

Pig farmers and their area: the shift from farming to residential land use

In the mid-1970s, land use in these rural areas changed radically as residential use became increasingly common. Since 1990, most rural community population numbers have been growing, mainly due to the arrival of newcomers. This trend is reflected in new home building along the roads leading to local urban centres, the damage of plots and the renovation of buildings to make second homes or agro-tourist accommodation such as bed and breakfasts, self-catering cottage rentals etc. From the livestock farmer's point of view, the new land use pattern has reorganised the division of farmland and the possibilities for its use. Among non-farmers, the idea of shaping the landscape and its uses to suit the demand for recreational space has made continual headway. In this perspective, the future of a rural area is a landscape where all outward signs of agricultural activity are obliterated. Multifunctionality, initially intended as a way of optimising land use, can be invoked as an experience and a baseline for judgements. When a pig farm (with its attendant nuisance factors) is visible and accessible in an area apparently destined for residential and recreational functions, it is closely watched and criticisms are often voiced. Sometimes the criticisms come from outside the local situation, and they can have a lasting impact on a farmer's daily work. They have all the more impact because the reconstruction of land use made the pig farmers vulnerable, and forced them to reshape their identity (Bonnaud and Nicourt, 2005).

The issues

The concept of landscape has proven its usefulness in the social approach to land use and development. Gamache *et al.* (2004) distinguish among several different definitions of and approaches to the word *paysage* (landscape). Landscape as object is the landscape of naturalists and classic geography, viewed in a morphological context. Landscape as subject is the representations people have of it, focusing on their intimate and socio-cultural ties to it; a sensory or aesthetic approach. The approach that connects object and subject looks at the relations between an actual type of landscape and the representations it

gives rise to. And finally, cultural geography takes an approach that puts culture at the centre of the landscape paradigm. Landscapes are constructed by societies that have created their environment according to their aspirations and practices; landscapes are in a way images of these last. This approach focuses more on the experiential than on the perceived (Voisenat, 2005).

In what sense are we talking about *landscape* here? In addressing an activity like indoor pig production, the geographical or physical landscape approach, using visual observation to identify its effects, is limited. It is useful, because it interferes with the farmer's relationships with his neighbours, with others involved in farming or trade, and with the consumers of the landscape. However, in this context we need to consider more than just the landscape's visible structures.

Because of the way in which indoor pig production integrates into the economic fabric and the production units, we need to perceive it as a whole, and consider its dynamics. Thus the landscape is also socio-professional and economic one; it expresses the pig farmers' way of living in their immediate micro-society and in the general society. In particular, the commercial modes of pig production have impact on the landscape. Our analysis takes into account the farmers' own representations of the presence of their activity in the economic and commercial landscape of the society in the region.

Lastly, these questions are perceived as central to the pig farmers' concerns about their professional identity, their business and the future of their business. Here we deal with the farmer's mental landscape: how he experiences and perceives the image of the landscape and his part in its construction. The pig farmers' identity is drawn on two types of judgement made about him and his business. First there is an aesthetic judgement in his peers' acknowledgement of *a job well done; a fine job of work*. This is the judgement of those who know the work from the inside, through their own experience. This is a judgement about the farmer's skill, intelligence and cunning. Then there is a utilitarian judgement, expressing the recognition of those who use the fruits of that work; opinion leaders, customers and society at large. From their viewpoint we must include neighbours' judgements about the unintended fruits of their work, i.e. the nuisance aspects. These identity factors are highlighted in their conceptions of the future, on which we shall particularly focus below.

The concept of landscape (*paysage*), then, is a complex one. In each element of the discourse it includes aspects of each of these three sets of perceptions. Several processes are relevant for addressing the subject in its complexity. This is the process by which exogenous knowledge about pig production is appropriated and becomes *endogenised*; incorporated in the specific situation, including land abandonment and socio-demographic recomposition of rural populations.

We can thus formulate the research issue as follows: *in Midi Pyrenees, are pig farmers' representations of the relations between pig production and landscape a structuring element for the future?*

This question is obviously worth transposing to other situations and locations, especially Brittany, where pig farming is not declining like in Midi Pyrenees, and where pig farming is more firmly based (Commandeur *et al.*, 2007b, 2006).

Materials and methods

In the summer of 2004, we conducted thirty extensive, semi structured interviews with pig farmers in Midi Pyrenees. The farmers were selected with the help of local experts, who were interviewed at first: technicians, chairmen and directors of cooperatives, and employees of the inter-branch organisation. The aim of the study is to represent the

diversity in the pig farmers' attitudes towards the regional landscape. The selection criterion for the interviewees was that they should be directly involved in farrowing (on-farm or in a collective unit) and have their own fattening unit.

The interviews took the general approach for the identification of farming styles (Commandeur *et al.*, 2007a). They addressed the applied pig production system, the feeding system, the organisation of work, the environmental impacts, the socio-professional integration, the specifications of the production area, the perceptions of the product and its production, the future, the incomes, and the farm succession. The interviews were recorded on a voice recorder and transcribed in their entirety.

With the transcriptions, we have focused on the way the farmers described their relationship with the landscape. We structured our analysis of the farmers' responses on three themes that together largely cover the meanings of *landscape*, as described above, and which emerge as specific problems in Midi Pyrenees. These are:

- the significance of pig production in the regional landscape
- the conflicts of interest with other stakeholders (farming and non-farming neighbours, recent settlers in the area, tourists)
- the pig farmers' views on the position of their products on the market and in the marketing networks.

Results

Here we report our analyses of each of the three themes, based on the most relevant extracts taken from the interviews. The quotations were selected from the transcribed material. The choice of quotations is based on the quality of the discourse, and hence on the analyst's subjective judgement, rather than on quantity or the number of farmers who expressed similar views. We have quoted the contributions of the farmers who expressed themselves about a topic even though other farmers mentioned little or nothing at all on that subject; whether that was for lack of interest or because they were less talkative we cannot tell. We have focussed on the argument and on how it was constructed.

The significance of pig production in the Midi Pyrenean landscape

To understand the farmers' reasoning, it helped to look back to the 1970s and 1980s, when the farmers had to decide how to develop the farm they were running. These were small, *plural active* family farms. To remain viable the farms needed either extra land to expand their production of dairy products, cereals, beef and mutton, or invest in intensive indoor production. Our interviewees were pig farmers, to the exclusion of farmers who chose other solutions at that time.

The main argument was that farmers already raised a few pigs for on-farm consumption as part of their farm economics, and some chose to make pig production a more professional activity so as to make their mixed family farms more viable. Pig keeping was chosen because pigs can be raised intensively indoors. The farmers explained their choice in terms of the fact that land was in short supply and impossible to acquire at the time they started out in farming or needed to expand.

"Pig production fitted with the structure of the farm I had, meaning a very small farm where pigs made it possible to earn an income and keep the farm in balance." (17)

"It didn't have a very large land stretch, besides, there was the dairy unit, but that was limited by the quotas. Well, pig production was the only way I could expand." (27)

“There were several solutions. We could try and find land to produce cereals and cattle, which were the usual products in our area. But that was a problem because we would have been in competition with other farmers to get land. It was complicated, so we thought pigs are an indoor business after all, and as the farm of my father and brother was already producing cereals, pigs would be a way of having a side product that made use of the cereals produced on both farms.” (2)

Farmers taking to pig production did not sell their land but used it for the farm's other remaining activities, particularly cereals, and for the discharge of slurry. This helped the farmers to maintain independence. The organisation of the farm labour had particular structural demands, whence the emergence of the collective farrowing units. It also enabled a farm labourer to be hired for part of the year.

“Pig production with farrowing and fattening, 80 sows, beef cattle, Aveyron and Ségala veal, 42-43 nursing cows and some replacement heifers, 50 hectares of UAA²: 20 hectares under cereals, the rest is growing forage. Cereals are used on-farm for the pigs and cattle. Slurry is used to fertilise all the crops, so there is little need to purchase fertiliser, just a little ammonium nitrate. – and you have got a self-sufficient farm.” (30)

“We produce about 3300 slaughter pigs, we belong to a cooperative group with a sow unit where the weaners are produced; it belongs to five farmers. On the farm itself we raise 2000 slaughter pigs and the other 1300 are raised on another farm that we pay per slaughter pig.” (19)

Although pig production had become the main income source for these farms by the 1980s, the pressure that started in the 1990s and the pig crisis since about 2001 have changed the situation. Other farming activities have (so far) saved these farms from collapse.

“We thought that economically the most important thing would be the sows, but since the crisis it has been the cattle.” (3)

“At the start, pig production, it was 80%, but bit by bit that has changed, it is back to 50%. And if it goes on dropping, it will get down to 30%. It is the rest that is gradually increased, but the pig production has stalled.” (7)

“It was the pigs that practically provided our living, except for the past two or two and a half years, with the crisis we are going through now. Milk has taken over the slack and it is milk that is keeping us going.” (17)

Today, pig production does not provide the farm with a structural capital gain, unlike real estate property, and therefore does not have a worthwhile sales value for farmers who are nearing retirement, or as security base for new investments.

“Because today, ultimately, my pig business will have zero value. It has only got value if there is a buyer. In a way, sure, we are letting our farms deteriorate with just minimum maintenance or no maintenance at all. It is a worry because it means production will get out of date technically and perhaps that is more worrying.” (10)

With the pig crisis, no new or young farmers are taking succession. When farmers retire, their farms are usually taken over by other established farmers who see this as the only way to develop their farms, even if it means working in several different places (outsourced on a per-pig payment system). There is still competition for land as real estate. This is generating jealousy, both between farmers and increasingly with non-farming stakeholders.

² Utilisable Agricultural Area

“The farmers’ world has never been very united; it is a case of dog eats dog. In our region it is flagrant where land is concerned, because it is expensive (80,000 francs per hectare); so there is fierce competition.” (22)

“We are situated near a highway exit, halfway between Toulouse and Albi, so as soon as there is a square centimetre for sale it is a non-farmer who buys it” (21)

The farmers are feeling that pig production is part of a whole system, which is getting destabilised, but they are unknown of what the consequences of current changes will be.

“It means maybe we should be worrying about the cereals, with an increase in cereals that won’t be consumed locally. Whether we like it or not, there is a product chain that is losing its coherence, in the region at least. I know there are prospects for regrouping stock farms together. There is talk of such things. That is good, but we are moving towards a different economic and socio-political system.” (10)

These views indicate the end of the period when pig production provided an income for family farms with little land. That period lasted a generation. Undoubtedly, many farms were sold (sometimes just for the land) which means that the remaining holdings are increasingly large, but scattered, and so require a different organisation of work. Either further development is possible based on the farm’s existing activity (e.g. by processing the product), or new initiatives might make it possible to make best use of existing installations. However, no farmer mentioned this in the interviews.

For the landscape, this means that the small structures are being replaced by large structures whose fields are interspersed with housing and non-agricultural activities. This change will certainly have an impact on the spatial dimensions of all the region’s agricultural activities. There will probably be more large scale cereal fields and large pastures. In particular, hedgerows will probably no longer become a salient feature of the landscape and the few remaining ones will stay around residential units.

Conflicts of interest with other stakeholders

The pig farmers express many anxieties about tensions with other stakeholders. Among the stakeholders we need to distinguish between immediate neighbours (who are sufficiently close to notice the odour and other direct nuisances), more distant neighbours (farmers or not), other country dwellers who may or may not be counting on tourism for economic growth, etc. The perceptions that the farmers express obviously differ sharply depending on which category of stakeholders they are talking about in the interview.

When the subject of relations with other local stakeholders was raised, some farmers simply say that they are OK, or “not bad”, without elaborating on the subject. Interviewees who did talk about this aspect revealed the following line of arguments: relations in the neighbourhood are reasonable because they take pains to limit the nuisance, but if they have a project for farm expansion, the underlying conflicts of interest emerge. So they must either face up to the conflict or attempt no new venture in order to avoid conflict. It emerged from the interviews that farmers feel they face an insoluble contradiction: that they are required to produce flavoursome pork, but invisible, odourless and clean.

The argument brings forward a clear awareness of the environmental issue (which is a farmers’ responsibility in that sphere), and the obligation to take the neighbourhood into account. It is the immediate neighbours that recur most often in the farmers’ discourse, especially when they talk about timing their slurry distribution: never at weekends. Taking precautions like that, farmer-neighbour relations are, on the face of it, “not bad”. In this regard some farmers say they pay attention to the weather, use a dribble bar, never spread slurry in the tourist season, etc. Their motivation is that they understand their neighbours’

feelings and they want to remain on good terms with them. Some farmers go further and say they want to rehabilitate the image of the pig farmer, which means they must be irreproachable on the environmental aspect. This attitude of respect for others goes along with an expectation of reciprocity from the neighbourhood and society: each one should respect their neighbour.

“When I spread slurry I check which way the wind is blowing, I check the weather forecast for three days ahead. Where I am, there is one village that gets the smell if the wind comes from the west and another that gets it if the wind comes from the south. If I know there is a bicycle race in the village, I avoid going into the fields and spreading muck on the road from the tractor wheels. These are small things, but you have to do them.” (13)



photo: Monica Commandeur, summer 2004

Photo 2: Slurry is often a cause of conflict with neighbours (summer 2004)

The farmers also discussed conflicts of interest encountered by building activities or by enlarging pig farms. The community may be mobilised through associations or petitions, and applications for official permission may become unexpectedly complicated. It is the neighbours (sometimes farmers themselves) who are regarded as the major activists in mobilising public opinion.

The local non-farming community objects to the inconveniences caused by pig farming, real or imagined, aroused by media coverage of environmental issues, which principally concern regions like Brittany. The farmers are shaken by this mass opposition to what they regard as their work and their life. At the same time they presume that the community has no insight in how they work, and that the community's protests are based on a profound ignorance of their business.

“When I enlarged the business eleven years ago, there was a public enquiry. There was a petition. It did not stop the project, but there are always tensions. We got the permission.

We were able to expand the business from 600 to 700 fattening places, which is not that big. Still there were other complaints afterwards.” (11)

“However much we do to improve our image, people are always against any project to expand a pig business at the onset. They think of us more and more as manufacturers and the more we try, and rationalise, and work with closed barns, the more people think we have something to hide; that we are producing artificial meat. We are beginning to think that as long as there were free-range sows polluting half the department, nobody said anything because it was natural to work that way, but now that everything is closed and watertight and we obey the law, we get much more criticism.” (21)

Sometimes a farmer manages to carry through his project and as calm returns the neighbours realise that it causes far less inconvenience than they expected. Farmers, whose projects have not proceeded, are doubly penalised: they have not expanded their business and in addition they have lost the faith, or at least the mutual understanding, which used to exist between them and their neighbours.

“What is more, when I talked to people who had been against the project, they were astonished how little nuisance there actually was. Anyway they said they saw no difference between before and after. Well, it is often the media coverage that spreads panic everywhere.” (27)

“Until five years ago life was a long quiet river as they say, and all was well. Then I applied for permission to expand the pig business. Some people wanted to stop me. So they made a fuss; they started an association and so on. And our plan was smashed. At first you have to come to terms with it and that takes a while. Once your head is above the water again either you recoil, or that is the end. I want to practice my craft through to the end.” (14)



photo: Monica Commandeur, summer 2004

Photo 3: Small pig unit in Tarn, summer 2004

Strengthened by the experiences, some farmers are relatively attracted to new projects to renovate or expand, regarding that this is necessary for the future viability of their farms. They also feel that the new regulations are an even more insuperable obstacle than pork prices.

“For me, relations are quite good because we didn’t want to push our initial expansion ideas to the limit, otherwise we would have been up against big problems. When we wanted to expand (...) we approached the local council, to test the ground and have opinions on slurry spreading, and we could sense it wasn’t going the way we wanted it to go. That was right at a time when public senses against pig farming were running high, so we dropped the project.” (19)

The pig farmer feels misunderstood, disrespected, unappreciated and even a scapegoat for a socio-environmental problem far larger than his region or the matter of pig farming. He blames other farmers and industry as much as his own activity. Farmers appear to lack a direct contact with the regional and national authorities that shape the policies they must comply with.

“They are conducting a public inquiry about pumping water from the Viaur. I have read the whole file and I am horrified at the way they are treating pig farmers. There are five pig farmers in the commune and you would think that pig farmers were the only ones to pollute the drinking water. And yet we are up to standard and we meet the specifications [for environmental care]. The water comes from 100 or 200 kilometres away and nobody looks at what other people do upstream.” (28)

“I had a chance to invite the Prefect of Tarn department and the General Counsellor of Ariège here. I was really glad that they came. I told them about my pig unit project. Now, looking back, I think we should have done that earlier.” (5)

The farmers have the impression that the society in the region wants to get rid of them by all possible (legal) means.

“I have the feeling we are misunderstood.” (14)

“The townies misunderstand us and so do some farmers with extensive systems (...). People like to see cows eating grass in a field, it looks pretty, but they don’t want any more pig farmers.” (22)

“They don’t want to wipe us out by making us close down because that would create too much fuss. But they are going to wipe us out by bring prices down too low and imposing more and more restrictions on us. We are going to have a very high cost price, a very low sale price, and we will just fade out and everyone will be happy.” (22)

Lastly, there has been a social change in relations between town and country, with the result that pig farmers, now in the minority, feel bullied by other country dwellers, newcomers and rural tourism. Pig producers have noticed that there is no longer any place for pig farms in the image of the countryside that the new country dwellers have constructed. When neighbours consider pig farming it is always the unwanted side-effects they think of, and it is above all the thought of the smell of slurry that bothers them.

“Farming neighbours? The ones that run tourist accommodation really don’t appreciate having pigs 500 metres away.” (20)

“We bother people because a lawyer or a doctor who is paid two or three million francs for his converted farmhouse doesn’t want a pig farm next door.” (21)

“I am on the local council and I am the only farmer on it, so it is quite difficult because I don’t get a hearing, people don’t necessarily feel concerned for farming even though this is a small country town and after all this is a very rural region.” (17)

This pig farmer’s position on his local council (being a minority of one) shows how important it is to understand today’s rural society better. Yet farmers say they are aware of the positive or negative role they play in the landscape. But although they may replant

hedges, in the current context with the pig crisis and an uncertain future, blending their farms into the landscape is not often a priority.

“I wanted a building in solid brick. I used large red bricks and here, in the Toulouse region, it is brick country. I did everything to make it as little visible as possible; I build it sunken and planted trees all round.” (4)

“I put up a hedge all round the building. I did that with the CTE³. But I think it is a good thing. The less they are seen the better. There are times they smell quite strong, and if you can see them you think of that.” (6)

“In itself, the farm is a pretty plant in a pretty environmental setting. Around the buildings, I admit, I have a lot of work to do, the tracks are ugly and we haven’t planted trees. I really do want to, but after two years of crisis I don’t have the means. I have given myself a bigger priority now, but it is true that it really must be done.” (2)

We note a desire on the farmers’ part to take account of the interests of other stakeholders as far as the organisation of their work allows. But public opinion and political pressure require increasing changes and force them to invest in the slightest environmental nuisance (investments with no direct payback); and the farmers cannot afford to invest because of the crisis.

“When I set out in farming, we would go to the bank to pay back part of the value of the building. No-one thought about working capital. We started up with huge overdrafts that dragged on for ten years, with huge bank charges. That has held back a lot of farmers.” (6)

“Because we always did it that way. The buildings, we never bought turnkey units, we built them stone by stone, so we have always worked that way. It may be the education we had from our parents but to start up in this business at that time, the banks would lend but they wanted an interest in the property. It was better for us to build than to start producing pigs quickly, and it is still the same today.” (16)

“I have got two labourers who live in. But, for two years now, it is just not working any more. My wife has a job off the farm. It is a bit different but I have got people to keep going. It is a business. I have to pay the bank, the suppliers, the wages and then myself, the boss.” (5)

The problems become acute in view of the long term. A farmer who must develop or enlarge his farm is faced with an accumulation of grievances against pig farming.

The pig farmer’s view of his product’s market position

Small farms that are members of local cooperatives have been swept up in a major economic current: mass distribution. Because of the distances inherent in the scattered nature of the farms and the diversification of farming activities, production costs have remained higher than elsewhere whereas sales prices are derived from the ones in Brittany. Local cooperatives have followed the national economic system and lined up with the demands of the supermarket chains.

On this issue, farmers first express gratitude for the work of the farm cooperatives. It has enabled them to specialise in pig production and achieve a certain degree of growth. From this viewpoint the cooperatives adapt to pig farming specialisation in Midi Pyrenees by fusions and organisational reconstructions.

³ CTE: Contrat Territorial d’Exploitation, a measure introduced in France (in 1999-2002) to subsidise certain improvements to reduce the environmental impact of farms.

In view of the organisational developments, divergent strategies emerge. Some farmers accept the power of the cooperatives and want them to continue with the current policy, but they expect that their cooperative will cut its operating costs through ongoing fusions. The cooperative will thus continue to gain more power in the market and bargain for better prices for the products.

“Because at present, the operating costs of the cooperative are too high for the volume they market. There will come a time when the costs for each farmer will be too high because volumes are too low.” (30)

“There are two ways of seeing it. Some farmers say the cooperatives have let them down, that we have gradually become slaves to the cooperatives. And some say the cooperatives have always been there and have always helped them. I think the cooperatives do an enormous amount of work; they have helped us to make progress for forty years now. But now we have to reform the system because it is no longer capable of adapting to today’s issues: problems with the environment, production and marketing. The producer cooperatives and supplies cooperatives are incapable of adapting nowadays, because they behave like heavy engines.” (2)

“We should merge four cooperatives to achieve a capacity of 500,000 pigs. We might be nothing compared to the Bretons, but we have to reorganise slaughtering, and coordinate everything. And unless we manage to reorganise the cooperatives we cannot achieve the rest. In my opinion we are heading for a crash. That is it. And it is serious. In the cooperatives, there is too much, if I might say, personal ambition, there is too much in-fighting instead of helping each other. Nobody wants to move, so...” (6)

The other view is that farmers should contest the power the cooperatives have acquired and the farmers criticise them for being too submissive to the supermarket chains and their policies. These farmers want to regain control of the commercial future of their products and discuss prices directly with the supermarket chains.

These farmers blame the supermarket chains for the substantial gap between the price paid to the producer and the price paid by the consumer. Concerning product price and image, the farmers are reluctant to do sales promotions for the supermarkets. They reason that it is more logical to short-circuit the middlemen and sell directly to the consumer.

“As well as asking us to produce at a low price, we have to do all this clowning around to sell the product just so that they can make their profits.” (19)

“That is mainly how we think about the producer cooperative: to try to take back the initiative, to get back into being the principle actors, because we delegated the selling job to them, we delegated a lot, and we have no control any more. We would like to take back that control to regain a little more money again; we don’t need much, we need a franc or one franc fifty per kilogram to get by. The money is there, we know it is there, but it ought to come to us and not be cornered by the middlemen who make a living for themselves while we are not making a living any more.” (17)

“Why go and do promotion in the supermarkets that buy from us at rock bottom price when it just makes one more supermarket a fat profit?” (18)

Emerging from all these arguments is the dissatisfaction with the way the cooperatives currently operate and their relations with the supermarket chains. The farmers have different views about possible solutions: continue (or not) with the (restructured) cooperative, with or without the mass distribution, with or without direct sales, or with additional added value.

One solution often mentioned is the initiative of ten farmers who have put up an organisation to obtain a label for the Protected Designation of Origin (PDO) of *Lacaune*

ham, a dry cured ham from a heavy pig, cured by using the authentic methods of the area. They are hopeful, in view of the label for a Protected Geographical Indication of Bayonne Ham. The pork for the Ham under this label is now produced throughout south-western France. Nearly all Midi Pyrenean pig farmers are involved in this project (Figure 1).

“Well, when you take an interest in the steps that are being taken to involve the region, you can feel that you are a producer of that region. ‘Mountain Pork’ means almost nothing, there is no spin-off and we get that classification just because we are in an upland area. ‘Bayonne Ham’ that brings some added value, but the authorised area for Bayonne is so huge it reaches right to the south of Brittany, you could say that is a bit too far. A local connection, like the Terre des Bastides CCP⁴ label, was put up by a local company you could say, so that is a proper local connection. If the PDO for Lacaune is granted, than that would be genuinely rooted in the local area.” (30)

“I hope that when we get the PDO for Lacaune, we will become a proper production zone. We have already got Bayonne Ham, but we are a bit far from Bayonne.” (6)

“Nearby we are losing a neighbour, who keeps pigs but he is stopping because he is retiring, or he is fed up with it. And that doesn’t do good, because if there is nobody around, the slaughterhouse will go 100 kilometres away and we will have to transport the pigs even further, and we will lose even more time, because a pig is not gaining any weight while it is in the truck. We just have to hope that Lacaune will get recognition as a PDO; then maybe we will be able to pull through. We shall see well enough.” (28)

But there is still some way to go before a PDO can be granted. The grassroots farmers still have a lot of work to do:

“I am one of the people organising the Lacaune PDO application. I am expecting a lot of this measure, because it is a way to boost our pig prices. In pig production, I have seen that there was money in the system, but there were also middlemen who took more than their whack and the farmer got swindled.” (4)

A solution is also required for the dilemma about the size of the area where farmers are interested in this project (all three departments) and the issue of defining the geographical limits of the PDO area. A farmer in Lot, not involved in the initiative, explains:

“When the boundaries of the area are set, either you are inside, or you are not. Yes, here we are in the PGI Bayonne area and in the Lacaune area. But one of the first suppliers of Lacaune ham today, under the PDO rules (although the PDO hasn’t been granted yet), he is a producer in Lot. And for a PDO you have to be in a territory, which means, a natural region [not an administrative one, like the Ségala is], and this fellow is not in the Ségala. So after a while he is likely to be excluded from the system, yet he is among the first for supplying the ham.” (24)

The process of the PDO project is moving ahead slowly. Some farmers have said that this slow pace is the reason for their relative inertia with regard to their technical investment:

“Change our methods? No, unless maybe restart planting again, because it is in line with the PDO Lacaune project.” (4)

“If Lacaune comes through, we will have to comply with the environmental specifications. We will have to get up to the standard for carcasses, there is everything to do with electricity, and we will have to separate the wastes.” (1)

“The only thing that could make me change has to do with Lacaune hams: we will have to produce heavier pigs. I think we will be obliged to keep pigs up to 105-110 kg carcass

⁴ CCP: Certificat de Conformité Produit

weight. And if we do that, we won't have enough square metres per pig in the buildings we have now. So we will have to enlarge the fattening section to try and house fewer pigs per square metre in the finishing period. And to my mind that is what will change in four or five years' time. This means that the fattening stage will also be longer." (6)

However, it also emerges from the survey that not all farmers are in favour of origin labels. Some farmers express doubts about the monitoring system and the risk of mixing with the pork that is produced abroad under different conditions.

"Up until now, we were worrying about the expansion of pig production in Spain. They did not use to have the same environmental constraints as us, but perhaps they will take them into account now. Denmark has problems too. We are afraid the pork they put into Auvergne sausages may now come from Brazil or elsewhere. We need to get protection so that Auvergne sausages come from Auvergne pigs." (22)

Some farmers express more confidence in generic quality labels than in geographical indications:

"The conditions required for the certificates have little to do with the quality of the meat. Space per animal is not a quality aspect; neither is the feed from cereals or other sources. The price premium for these certificates is based on the slaughtering and processing, not on the carcass quality. I don't think the extra margin will be paid to the pig farmers. It will go to the processors and slaughterers, not the farmers." (15)

With this reasoning, we return to the discussion about margins; a subject explicitly addressed by another farmer:

"Today, they sell meat with a label simply because the processor complies with specifications. They ought to be stricter and they should understand that we need a little more profit. They pay us 1 euro for the meat, the consumer buys it at 7 or 8 euros, and that is absurd. They should pay us 40 centimes more and sell it for 40 centimes less. But the middleman is so powerful..." (22)

This in turn brings us back to the discussion of power relations in the product chain in the region. The solutions, although varied, all point in one way or another to a regional re-appropriation of pig production to reintegrate it into the social and economic landscape.

Discussion

The interviews provide considerable material, which we have organised around the conception of the visibility of pig production. Midi Pyrenees pig farmers express considerable concern about this issue. It entails a number of paradoxes, which we discuss below.

Vanish sneakily to stay in business?

The farmers' construction of their reasoning is in general closely connected to the landscape in the broadest sense. On the one hand there is the geographical landscape, with the possibility (or not) of growing cereals and the infrastructural links between the various entities (transport between farms, feed suppliers and slaughterhouses). On the other hand there is the socio-professional landscape governing relations between the different services (feed suppliers, cooperatives, slaughterhouses, distributors) and among peers. This is of course closely interwoven with the geographical landscape, and is a determining factor for the organisation and management of the farm.

The pig farmer finds himself in a mesh of tension. He is unable to earn a reasonable income in a landscape that is shaped geographically by fragmented land ownership and use (Triboulet and Langlet, 1999) and socio-professionally by the distribution networks and the scattering of peers. Furthermore, relations with the neighbours, newcomers to the countryside, tourists and other farmers, are increasingly tense. Pig farmers feel that they are not fully recognised as stakeholders in the landscape. They feel excluded from the region's future.

The pig farmers cannot organise their activities and their business without taking their neighbour's perceptions into account. Nor can they plan to expand at wish, because they may draw attention to themselves and become a target for people's resistance, who in some cases are not local at all, and whom they do not regard as rightly concerned in the area. The prospect that several farmers express, is to disappear completely so as to pose no further problem. To exist, it seems that they must become invisible.

If pig farming stops, is there a visible impact?

If the question of withdrawing from pig production is raised; either to stop farming altogether or to switch to another farming system, the farmers describe a situation in which the physical landscape would change considerably. In many cases it would lead to larger farm holdings, concentrated in fewer hands, and with scattered farm buildings. This would require a more labour-saving (collective farrowing units etc.) farm organisation and a more efficient infrastructure, which would mean larger fields and far fewer hedges.

This kind of scenario would considerably change the landscape. An activity with low visibility nonetheless structures the landscape, even indirectly. One way to recognise the existence of pig farms and the role that the pig farmers play, is to investigate how the landscape changes if they disappear. This needs the support of more specific research. However, the paradox seems a theoretically interesting one: pig farmers play an integral part in maintaining the landscape structure and they assert this by pointing to the visual changes that would take place if they disappeared from the economic "landscape".

Hiding or having something to hide?

To continue their business, pig farmers have to conceal their farm; to conduct it without the neighbours noticing or suffering any inconvenience. However, some farmers point out that in doing so, they leave themselves open to other stakeholders' suspicions. We live in a society that increasingly demands transparency in all fields of business. This equally applies to farming, which regularly puts its most likeable aspects on display to the public. It goes without saying that any business that conceals its production processes and only occasionally draws the attention of local stakeholders is bound to arouse growing concern.

This presents us with a new paradox: pig farming has to be concealed to make it acceptable, but the more the pig farmers hide their activities, the more they are suspected of wanting to conceal something. How can this problem be overcome? One way is to give the production system a higher profile in the commercial presentation of a desired product on the market. That is the key point of a project like the PDO label for Lacaune ham. Aside from its sound impact on the farmers' strategic orientation (production of heavy pigs fed on locally produced grain), one of the expected results is the ability to make the pig production activity itself more transparent.

Contrasting options for the future

Analyses of the pig farmers' survey responses show that the farmers favour different strategies for the future of their farms:

- to do nothing / invest nothing and wait for retirement or to hand over the farm
- to stop pig production and develop the farm site in some other way
- to wait and see what strategy their cooperative develops and invest in the projects that the cooperative chooses (IPG for Bayonne ham, heavy pigs or not, generic quality labels or specific certification like Label Rouge, the PDO for Lacaune ham, or otherwise),
- to do whatever is appropriate to upgrade the holding as it is, e.g. by enlarging the pig unit, lengthening the production cycle to produce heavier pigs, or reorganise and streamline the farm work
- to buy other farms, enlarge, invest in efficiency measures, and develop outsourcing, e.g. on the basis of payment per produced slaughter pig.

At the collective level of pig farmers' cooperatives, the two sides of the study area show marked differences in development. Until recently, pig farming developed similarly throughout the pig production basin, based on the scientific and technical advances of the 1970s and 1980s. But since the crisis, the two sides of the production basin have taken different strategically paths, connected with the restructuring of the producers' cooperatives.

In Lot, there are few options for developing a quality label linked to local features: the land is too acid for good cereal production, there is no authentic local tradition for its processing pork, and there is no commercial slaughterhouse in the department or elsewhere that is linked to the cooperative.

Most pig farms in Lot are small-scale and incorporated in a mixed farming system (Commandeur *et al.*, 2007a). The farmers are eager to avoid annoying the neighbours. The reconstruction of the producers' cooperatives in Lot has resulted in a single large cooperative, Qualiporc, which has favoured the Label Rouge project. Label Rouge is a quality label that aims to avoid provoking the neighbourhood and the general public; specifications include rules on environmental management, buildings that blend into the landscape and animal welfare measures. Thus the department's pig sector has found a collective strategy that links low-visibility practices to a product's image.

Research by Nguyen *et al.* (2004) conducted both in Midi Pyrenees and elsewhere, showed that pig farms with organic or other quality labels such as Label Rouge generate environmental benefits. However, the data obtained from the environmental indicators do not necessarily prove better than on other farms. The invisibility of the farms is therefore an indispensable element of the label's image.

The situation in Aveyron and Tarn departments is complex. From the territorial viewpoint it would be possible to develop products with a label for the geographical origin, especially in the Ségala, which is traditionally known for its cereal production. Aveyron also has a tradition of authentic processing methods (the PDO for Roquefort cheese and Aveyron veal). There are also specific facilities available for processing heavy pigs in liaison with the Lacaune slaughterhouse. So there is a potential for developing a product that implicate deliberate public exposure of well perceived production methods.

But Lacaune is not the only slaughterhouse in this part of Midi Pyrenees pig farming zone. The two largest cooperatives, Rouergue Elevage (RE) and Alliance Porc Sud (APS), both have their own large slaughterhouses and have no interest in reducing their own slaughtering business. On the contrary, due to the declining business in the area they advertise to attract the supply of pig from other areas (mainly Brittany) to their slaughterhouses. As a result, several more or less incompatible strategies co-exist within the cooperatives' interest and they hamper the emergence of a united front.

- To profit the most of the product chains they have created, RE and APS need to encourage their members to make use of their slaughterhouses to reduce the investment costs of and to keep (or regain) a competitive position vis-à-vis Brittany, Spain and the other production areas. But this would emphasise the enlargement of the farms and so, among other things, stresses the provocation of the neighbourhood with the pig farm business and its associated nuisance. And this continues with uncertain prospects, both for farm profits or for maintaining local social contacts.
- The farmers who launched the drive for a PDO for Lacaune ham have difficulties with organising themselves, because they are scattered over the departments and some of them are members of RE or APS. The definition of the geographical boundaries for the pig production area is difficult: should it be limited to the Ségala, with its good cereal-growing land, or extend further to the whole basin as shown in Figure 1? If these farmers manage to define a PDO for ham, a vigorous promotion drive will be needed, linking the product with its production methods, and facilitating a greater visibility and display of the pig production methods.
- The option that is promoted in Lot is to melt into the landscape, facilitated by the production of Label Rouge. But for many parts of Tarn and Aveyron this option is not realistic, because the greater density of pig farms, and because the farms are larger, so invisibility would be harder to achieve.

Conclusion: to expose or to vanish?

Our survey shows that the pig farmers in Midi Pyrenees feel that they are not recognised as making a positive contribution to the regional landscape and they consider themselves excluded from local visions of the future. Analysis of the views expressed in the survey shows several contrasting options for pig production; trends that are already emerging in the departments of the study area. The two extreme strategic models in the area are described as follows:

Melt into the landscape and stay as invisible as possible to avoid provoking negative reactions. This means adopting environment-friendly production methods such as Label Rouge or the organic label, which will be tolerated by the neighbourhood. Endogenisation of knowledge is relatively weak in this case because the specifications are based on generic rules. Qualiporc, the farmers' cooperative in Lot is exploring this option. However, the prospect remains uncertain as it depends largely on the label's commercial success compared to conventional pork, and so to the extent at which consumers are dissatisfied with conventional pork.

Adopt a high profile and display the production process through a speciality product with a claim to authentically local features. This means being visible as an integral part of the local heritage by adopting production methods that are distinct from the standard methods and successfully combine indigenous and endogenised knowledge in a technical system specific to the region. This is the solution promoted by the initiators of the PDO for Lacaune ham. But they face difficulties because their region is largely occupied by pig producers, cooperatives and slaughterers who are not playing this card. Moreover, the success also depends on their ability to base the heritage claim not only on the image of the end product (dry cured ham) but also on the pig production process.

It should be stressed, however, that most pig farmers in the survey area are choosing not to choose, submitting to the direction of their cooperative to maintain the orientation of the pig production towards the standards product. In return the cooperative gives its members no particular support to cope with the consequences of this option in the neighbourhood setting and for the construction of landscape.

In Midi Pyrenees the representation of the pig producers of the relationship between pig farming and landscape, proves a structuring feature in view of the future. Thus the landscape, the changes in it, the strategies and tensions it incorporates, and the conceptions of the farmer's activities that are expressed in it, demonstrate the highly dynamic situation as it is related to the pig production sector.

Literature

- Bonnaud L. et C. Nicourt (2005). Les critiques de l'éleveur à l'épreuve de la réorganisation de son territoire de travail. 10 pp. Contribution dans le cadre du programme « Porcherie Verte (INRA) »
- Commandeur M.A.M. (2003), Styles of pig farming. A techno-sociological Inquiry of Processes and Constructions in Twente and The Achterhoek. Thesis (400 pp), Wageningen University, The Netherlands, ISBN 90-5808-832-4
- Commandeur M.A.M., F. Casabianca and R. Le Guen (2007a) Contribution of a farming styles approach of cooperative actions of swine farmers in southern France. *Rural Sociology* [23 pp; in progress]
- Commandeur M.A.M., Casabianca, F. Le Guen R. and J.Y. Dourmad (2007b). An Exploration of Swine Farming Styles in Brittany (France). 10 pp. *Sociologia Ruralis* [10 pp; submitted 2006]
- Commandeur M.A.M., Le Guen R., Dourmad J.Y., et Casabianca F. (2006). La diversité des styles d'élevage porcin en Bretagne. Une approche dans les Côtes d'Armor. Journées de la Recherche Porcine **38**, 247-254, Paris
- Daridan D. et Ilari E. (2005). Typologie des exploitations ayant des porcs en Midi-Pyrénées, 11 pages (non publiées) ITP Pôle Economie Toulouse
- Daridan D., Van Ferneij J.P., De Jubecourt D., Simon M.N. (1998). La production porcine : trois zones, trois dynamiques, Agreste – Les cahiers, **27**, mars 1998, 27-39
- Gamache N., Domon G. and Y. Jean (2004). Pour une compréhension des espaces ruraux : représentations du paysage de territoires français et québécois. *Cahiers d'économie et sociologie rurales*, 73, 71-102.
- JRL Conseil /I.D.E. Environnement (2000). Filière porcine, environnement et développement durable. Rapport phase 1 (51 pages) et 2 (27 pages) + Annexes, Midiporc, Auzeville
- Nicourt C. et S. de Gasparo (2005). Critique du travail et fragilisation de l'identité de l'éleveur. Journées de la Recherche Porcine **37**, 391-396, Paris
- Nguyen G., Dobbs T.L., Bertramsen S.K. and B. Legagneux (2004). French quality and eco-labelling schemes: do they also benefit the environment? *International Journal of Agricultural Sustainability* 2 (3): 167-179
- Proteis⁺ (2005). Etude de la Filière Porcine de la Région Midi-Pyrénées. Synthèse et Plan de Développement Régional, 31 pages, Midiporc, Auzeville
- Triboulet P. et Langlet A. (1999). Différenciation des espaces ruraux et insertion territoriale de l'agriculture. Réflexions méthodologiques à partir de travaux effectués en Midi-Pyrénées, 21 pp. Application à l'agriculture, l'agro-alimentaire et l'espace rural, Le Croisic 8-10 décembre 1999