Creating a network of actors to improve animal well-being and working conditions in a pig breeding unit: a case study in France

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Abstract

With about 36 kg per year and per head, pork is the most consumed meat in France. Annual production is assured by a livestock of 15 million head, in 46,500 breeding units, of which more than 25,000 have fewer than 20 pigs. Therefore, more than half of farms are small firms consisting of a farmer and one or several employees. In this context, the difficulties experienced by this kind of small structure are different from those in medium and large firms such as design of premises, work organization or prevention of occupational hazards. In this paper we shall be interested in how these small pig breeding structures function, in terms of ergonomics.

We first accepted a request from a prevention organism in the farming sector concerning the improvement of animal well-being and working conditions. We visited 2 farms in order to understand in detail how they operated. We very quickly involved different external bodies to understand all the issues and to find a means of bringing about change:

- Agricultural Social insurance body (MSA)

- Chamber of Agriculture
- Committee of Hygiene of Security and Working conditions
- Pig breeders group
- National Institute of Agronomical Research (INRA)

This experience emphasizes the difficulties experienced by small farms in adapting their premises and their working procedures or changing their attitude to animal well-being and the prevention of occupational risks. This study shows the importance of building up and supporting an external professional network: internal organization and capabilities are not sufficient to deal with these questions efficiently. In this context, it proves to be essential to instigate collective action. Finally, this study demonstrates the advantages to be gained from using an ergonomic approach.

Key words

Pig farms, risk assessment, animal well-being, prevention, ergonomics.

Introduction

In the context of European directives on animal protection, and sows in particular[1], new regulations are in place for their protection, for example:

- Gestating sows should be reared in groups (2003 to 2013);
- Sows must not be tied up;
- Sows must not be confined in crates after 4 weeks' gestation;
- No mutilation (teeth and tails) unless there are rearing problems;
- Pigs must have access to manipulable material.

These points may alter the way the pig units operate and thus the work activity of the pig keepers and hence their working conditions may also change. It must be said that the profile of the farmers is very much one of a desire to perform well and to rise to a challenge and in this respect, reactions to the obligation to respect the animals' "well-being" and to rearing gestating sows in groups was significant. First of all there was (and still is) a general negative reaction to obligation, and to the fact that bringing the animals' "well-being" to the fore would possible be to the possible detriment of human "well-being", as a result of price fluctuations and the stigmatisation of this occupation by society. Subsequently, it took on a new focus of interest because of its novelty, and a new challenge for the farmers and their employees: to recover a Human/animal relationship that had been partly lost over the years as techniques have evolved with the aim being as much as possible to master the animal. It was in this context that the MSA in Brittany[2] (Mutualité Sociale Agricole) formulated a request to which we responded, concerning *working conditions associated with implementing standards in animal well-being in pig farms*. This request was made by the prevention department, following several observations by their members:

- Little work done in pig farms concerning occupational risks;

- Wish to develop services for pig farmers;
- Requests from the field, especially via the CPHSCT (Joint Committee on Occupational Health and Safety);
- Requests from agricultural colleges, from the ANPE (National Employment Agency) etc. on various aspects of working conditions, risks, safety, etc.;

Their two initial problem areas were:

- How to respond to the "animal well-being" question;
- How to revive commitment on the part of the pig farms and instigate a more global approach to overhauling working structures and conditions.

After first checking that there was a degree of interest in this request on the part of pig farmers themselves in the field and the CPHSCT, we decided to accept the MSA's request by suggesting that an ergonomic procedure[3] be put in place to look at the matter.

Housing for the sows is the first element in the pig production chain. On its operational success (the number of piglets born and weaned in the year) will depend the number of pigs sold in the year. This is therefore a crucial unit in the economic success of the business. For this reason, we focused our efforts on this activity in particular.

Approach and methods

As a general rule, we place considerable importance on building up networks of actors during the ergonomic analytical process. Indeed, this is an important part of the ergonomist's work. In the case of the present study, the size and structure of the businesses was a major feature. In fact, in both the farms that we visited, there were only two farmers and two employees.

	Farm 1	Farm 2
Staff	2 farmers + 2 employees	2 farmers + 2 employees
Production	70 ha Cereals/Maize Breeder/Fattening pigs 250 sows	100 ha Cereals/Maize Breeder/Fattening pigs 220 sows 1 shed of suckler Limousines (cows)
Buildings	3 sites	1 site
Production method	Slatted floors	Slatted floors

The two main actors involved in this project are the MSA, who initiated the requested, and the operators, the pig farmers who are struggling to manage their units so as to achieve the animals' well-being and whose working conditions must be improved. This request was accompanied by an observation: that prevention as overseen by the MSA was not sufficiently present in the pig production units. Part of our task was therefore to create a bridge between the MSA and the farms. A major feature of the structural organisation of pig production in Brittany is the pre-eminence of groups of producers; it was therefore necessary to mobilise a group of pig producers, both to put us in contact with farmers who were potentially interested, but also to give us access to their technical knowledge and their thoughts about their work. Also, before observing a production unit, we wanted to carry an open observation in a reference pig unit to enable us to understand the general operational procedures. Then as well as a major document search, we created in parallel a small group of key people in this field, as well as the actors we initially planned to involve:

- A working pig Human;
- An adviser from the Chamber of Agriculture, member of the regional working group on working conditions in pig production;
- An ergonomist specialising in agriculture;
- A researcher from INRA.

Subsequently, we set up a traditional ergonomics procedure (Daniellou & Béguin, 2004), based on an understanding of the true nature of the work carried out, in order to bring about changes:

- Presentation of the procedure to the employers and employees concerned;
- Choice of working unit;
- Observation of working situations and interviews;
- Analyses and diagnosis;
- Submission of results to the actors concerned for approval;
- Construction of courses of action for solutions.

Results

General process

First, sows have some behavioural characteristics, confirmed by our observations in a production unit:

- Poor eyesight and visual sensitivity (especially as they move from a dark area to a light area);
- Difficulty in walking down slopes and refusal to move forward if pushed from behind;
- Curiosity and willingness to play;
- Strong reactions to brutal treatment and aggression from fellow pigs and men;
- Weak heart.

These characteristics obviously have a major impact on working conditions and are a source both of pleasure at work, and of considerable risks, and they determine the occupational process and the way this process is implemented. Genetics also influence behaviour. For example, the Naïma race, present in the two production units observed, is recognised as

“lively and somewhat aggressive”. This characteristic leads to more fights in groups of gestating sows.

Overall, the relationship between pig men and sows is fairly complex. This relationship with a breeding animal is basically seen by the pig farmers as one of exchanges, which goes beyond the scope of a contract or of the law. The relationship between the animal and the pig keepers may give rise to an analysis based on giving, with this link seen as more important than the goods themselves (Porcher, 2001). Porcher’s studies are very explicit concerning this idea of animal well-being and in the context of work and its impact on Human, they reflect the reactions of breeders and keepers, who were pleased to find that by having the sows in the “gestation units reared in groups”, they were able to enjoy once again a relationship with the animals that had been lost as techniques had developed.

From the point of view of operating methods, the cornerstone to organising production in almost all breeding units remains group rearing. This production system, which is currently found in all pig units, was invented by INRA during the 1970s. The principle is based on dividing the sows into batches for rearing and in particular weaning a batch of sows on a set day. This method is favoured for several reasons:

- Rational organisation of work;
- Better supervision of the two essential units: the gestation unit and the farrowing house;
- Optimal use of buildings;
- Washing and disinfecting made as simple as possible;
- Considerable commercial interest in order to produce slaughter pigs of constant quality, on a regular basis and from simultaneous births.

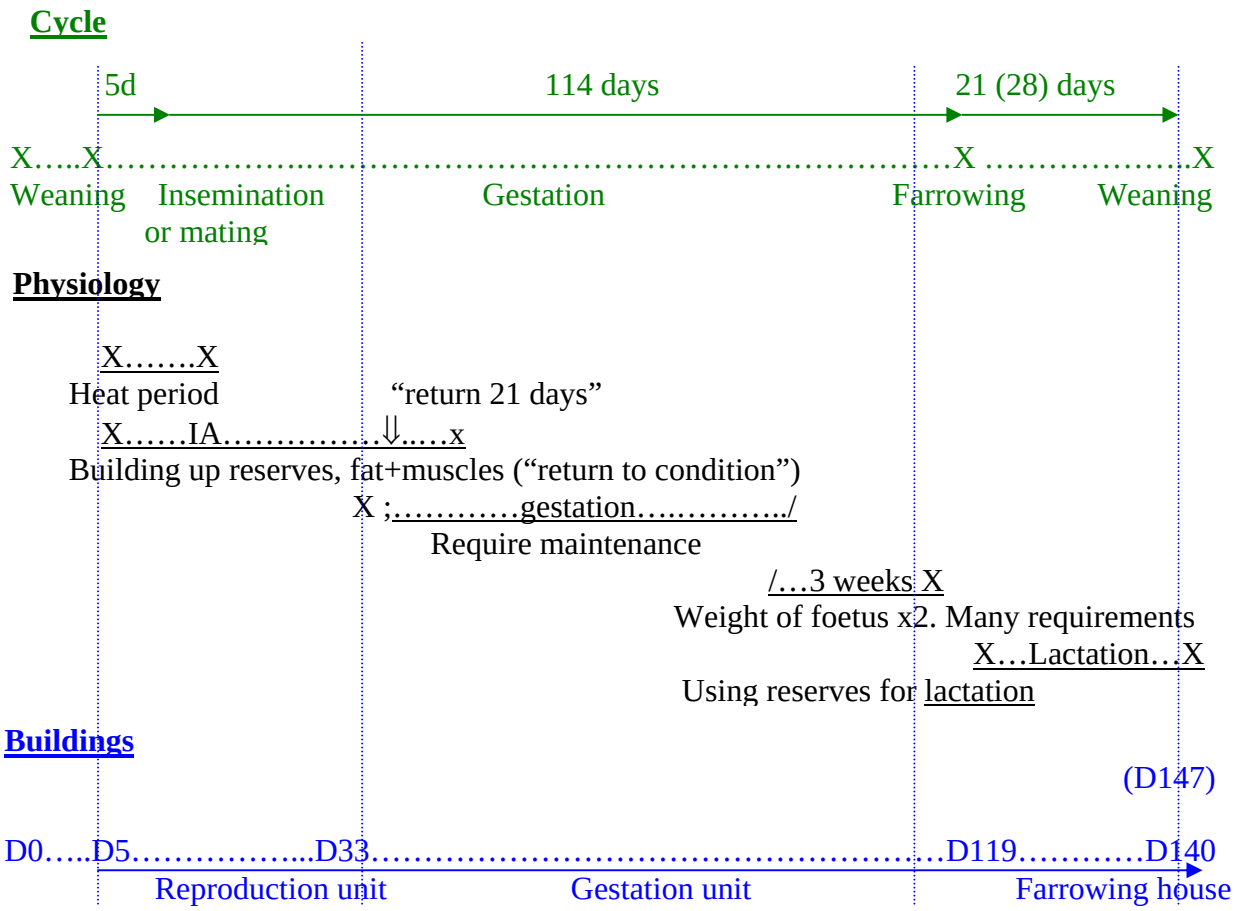
Based on the length of the sow's cycle (with lactation), and the gap decided on between batches, the number of batches and the number of sows can be determined:

Farm 1:

- 5 groups, weaning 21 days, interval 4 weeks:
- 140-day cycle / 28-day interval = 5 groups
- 250 sows / 5 groups = 50 sows per group

Farm 2:

- 4 groups, weaning at 4 weeks, interval 5 weeks:
- 147-day cycle / 35-day interval = 4 groups
- 216 sows: 4 groups = 54 sows per group



The sows' production cycle lasts about 140 days, from mating (or insemination) to gestation then farrowing. With each cycle, the animals change buildings and the gestation unit is where they spend most of their lives (about 80%). This phase is therefore central in the development of the animal's well-being and becomes a major occupational focus: the well-being of gestating sows.

Diagnosis and recommendations

Monitoring

The "well-being" gestation unit increases the need for monitoring activity considerably. Also, the need to "leave the group to themselves" contradicts the basic tenet of the pig breeder's duties, which is to bring all the sows to the end of their gestation period with individual monitoring. The four main aspects of this monitoring activity are:

- Anticipation;
- Observation of the animals;
- Constant assessment of the situation;
- Decision and action.

Nevertheless, this gradual change in activity towards monitoring the group of sows challenges the long-established rules. The reactions of the operators concerned were as follows:

“It’s a simple system but technically difficult to manage.”

“You feel powerless when problems crop up.”

“You’re not really doing the job of pig farmer.”

Management in sub-groups

Putting the animals into smaller groups had other advantages. It was then easier to recycle old buildings, and groups could be divided up into sub-groups according to different feed requirements and characteristics:

- Gilts[4],
- Thin, small sows, and the youngest sows,
- The most vicious.

From this point of view, the system certainly meets the requirements of the task, and in the units that were observed, out of groups of 50/54 sows, with sub-groups of 5 to 7, there could be 8 groups per batch, which allowed for fairly fine distinctions in distribution[5]. On the other hand, although this system provides for a better visibility of the animals, it makes it more difficult to perceive more delicate problems at individual level. Six sows, restricted to a pen, are still easier to monitor, but they are always necessarily closer together, and the demeanour

of a sow in difficulty would not be very noticeable. Also, there is no guide to individual food consumption apart from observation and we noted difficulties in diagnosing the scale of the problem of socialisation in a sow: “Sometimes we only noticed that a sow wasn’t eating after three days, when she started to lose weight”.

This system leaves little room for a sow to escape when she is attacked by her pen-mates, whereas with large groups, smaller groups can be created within the large group, leaving much more room for escape, especially if the installation consists of partial internal partitions. From the point of view of working conditions, many workers find the passive observation of animals attacking each other fairly hard to bear (and sometimes unbearable):

- the psychological price may be high;
- the economic cost may be high if it means buildings are under-occupied, after maltreated animals are removed or if the consequences of maltreatment lead to abortions.

When small boxes are used, dividing the sows into suitably matched groups is the key to a successful unit. In doing this, the operator wants to ensure that each sow can be monitored individually, that fights are avoided and that optimal use is made of the buildings.

It would certainly be interesting to develop herd management techniques that were no longer based solely on forming and managing groups, but also on forming and managing smaller sub-groups:

- Think about matching for division into groups as soon as the gilts arrive;
- Consider different breeds, that are less aggressive or timid;

- Adjust the groups and the smaller batches so that there are a minimum of 3 or 4 batches per group;
- The aim of the “well-being” group is to socialise the sows. This suggests that it is preferable to keep the same animals in the same groups. To do this it is necessary to set up a system to retrieve, store and use information about the behaviour of each animal: dominant/submissive, aggressive/fearful, etc.

Information management

In the two cases observed, production was a continuous process as the breeding activity never stopped and the average size of the units was between 170 and 200 sows, with a fairly rapid turnover. Even when there are several employees, the pig keepers we spoke to all said that they knew every animal, which means that information management remained a major part of the pig keepers’ duties. Being well informed means being confident in decision-making. Our analyses show that three tools are often used:

- Chalking on panels fixed to the walls or on small portable wooden blocks;
- Computer;
- Sheets for each individual animal and each group, from a computer printout.

Using a combination of all these information systems would seem to be an efficient way of operating and ensures a degree of security in decision-making. In the context of “well-being” gestation units, it is also recommended that data on the individual social behaviour of each sow should be collected and processed.

Moving animals

When animals are being moved these are times when the composure of the pig keepers can be sorely tested and when they can be in danger. An understanding of the sows' behaviour is essential in order to adapt their route bearing in mind the following:

- Sows have poor eyesight and are sensitive to glare;
- They find it difficult to move from a dark area to a bright area (easier for them to go from light to dark);
- They prefer to move along the walls;
- They do not like it when there is a break in the colour of the walls or in floor coverings;
- They demonstrate group behaviour, but they can easily dissociate themselves from their group;
- If a sow is pushed from behind, she will remain fixed to the spot or will back up;
- If a sow panics, she may charge straight ahead;
- A sow can weigh 300kg so a confrontation always carries risks.

It should also be noted that when the keeper is stressed, his field of attention becomes focussed, may be reduced, and can put him in a situation where he does not perceive an imminent danger (unevenness in the ground, an obstacle at head height). Consequently, moving animals in a well-ordered fashion plays a major role in the animals' well-being and affects the working conditions of the keepers.

It is recommended that some operational rules should be put into application, and that some improvements be made to the existing premises:

- Do not push the animals;
- Position yourself behind and to one side so that they can see you;

- Whenever possible, work in pairs;
- Remain calm at all times;
- Set up lighting systems that are flexible and which can create “pathways” of light;
- Avoid breaks in the walls or partitions;
- Have uniform floor covering.

Another point in this context, narrow corridors take up less space. This is probably their only advantage, though a not insignificant one. Narrow corridors are designed to prevent an animal from turning round. However, in practice there may be problems:

- A very small and very agile gilt;
- A fight between animals that provokes some exceptional behaviour;
- A door left open…

Although infrequent, such hazards do occur. In this respect, wider corridors would seem to be a good way of leading the animals from place to place. They will prevent the tension from mounting if a fight breaks out between animals. The keeper can let an animal turn round and will then easily be able to turn it back in the right direction. Wide corridors will also limit violent confrontations between Human and animal.

Observing the sows

Our analyses have shown that it is essential to spend time observing the sows. This would seem to be most effective during feeding times, since the rest of the time the sows are lying down. It is therefore necessary to ensure that feeding time is scheduled so as not to interfere with other important duties. For example, farrowing takes up all the keepers’ attention, and so they are not inclined to carry out observations at that time. In order to know what state the

pregnant sows are in and take any appropriate decisions, they must be observed. Consequently, this aspect of the pig keeper's work must be recognised and integrated into their work schedule.

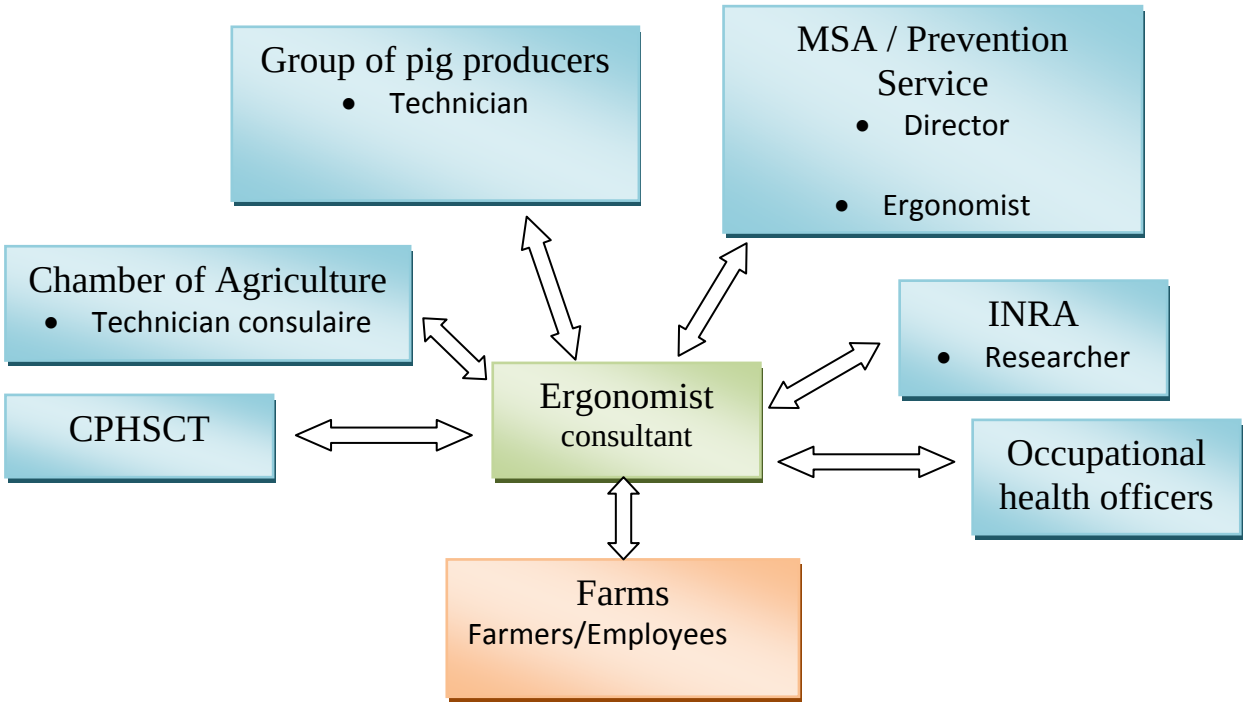
Manipulable material

Current legislation makes it compulsory to have "manipulable material" available for the animals. This may be objects (balls, chains), material (straw), with which the animals can play, which they can chew on, manipulate, all of which represents natural behaviour for pigs. This clause in the legislation is seen by the pig producers only as a constraint, and it is very often neglected by pig keepers, especially as it is difficult to find suitable "manipulable material" that is robust enough to withstand the animals' enthusiasm. However, manipulable material could be an invaluable aid in limiting another activity that is highly appreciated by sows which is fighting, a source of problems that are sometimes difficult for the pig keeper to resolve. In the case of small groups, where there is little room to run away, and where there is no straw, the subject of manipulable material is certainly one that should not be ignored. It appears essential to look into the question of product design, to talk to suppliers, so that pig breeders can be offered manipulable material that is suitably adapted to real situations.

Creating a network

Although we were able to produce a diagnosis and formulate working courses of action based on our analyses, our intervention very quickly came up against a lack of means to bring about changes. Moreover, when our analysis and our recommendations were put forward for discussion it very soon became clear that further resources and skills would be needed to bring about effective transformations. When this type of problem arises in a larger enterprise, there are probably competent people within the enterprise itself who can set these

transformations in motion and put them in place. In the case of small pig production units, however, it is necessary to look outside the unit to find the key actors. This is why we quickly realised that it was essential to create a network of people, all of whom were involved in these



major questions regarding the activities of pig production units: animal well-being and working conditions.

The diagram above shows the network of actors that was created, for two reasons:

- A better understanding of the way pig production units work and any relevant political and institutional issues;
- To ensure that transformations could be put in place, as the farmers on their own had neither the knowledge nor the means to do this.

First of all, and what we hoped for as a priority, was to build up a network of actors which could continue to operate after the ergonomist had left. For this reason the number of actors chosen and the decision as to which actors to choose, and we did not approach them all in the

same way, were important. The prevention department of the MSA, which made the original request, formed the hub of this network. The various branches shown in the diagram above are still carrying on with the work that was begun earlier. The researcher from INRA and the technician from the Chamber of Agriculture provided invaluable technical information. Their expertise gave this process credibility. The technician from the group of pig producers at first also had the role of information provider, but he became an active member and is still a key actor in putting plans into action and providing information about work carried out. Lastly, the CPHSCT (occupational health and safety) and the occupational health officer, who up until then had given much thought to the question of working conditions, found, through the setting up of the animal well-being system, that they were able to act to improve working conditions. Without the mobilisation of these different bodies, these different actors, it would, in our opinion, have been very difficult to carry out concrete transformations to improve animal well-being and working conditions.

Conclusion

This ergonomic intervention into two small business structures enabled us to provide a certain number of concrete recommendations to improve working conditions and animal well-being. We were able to highlight some essential pointers towards future actions in these small businesses:

- There is considerable advantage to be had in dealing simultaneously with questions of animal well-being and working conditions;
- The financial capacity of these small structures makes it difficult for them to invest in matters related to animal well-being and virtually impossible in the case of ergonomic solutions;

- Their involvement in work and the risk culture developed by the pig breeders means they have little opportunity to stand back and assess any difficulties associated with their work.

Word count: 4 089

Notes

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[1] Directive 91/630/EEC of the Council, of 19 November 1991, laying down minimum standards for the protection of pigs

http://eur-lex.europa.eu/smartapi/cgi/sga_doc?smartapi!celexplus!prod!DocNumber&lg=fr&type_doc=Directive&an_doc=1991&nu_doc=630

Directive 2001/93/CE of the Commission of 9 November 2001

http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32001L0093:FR:HTML

[2] Region of North-West France.

[3] This study was carried out for the most part by Christian Balaud, Ergonomist.

[4] Pubescent sow that has not yet farrowed.

[5] Dividing a batch of animals into fairly similar sub-groups.

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