

# Do labour productivity and preferences about work load distribution affect reproduction management and performance in pig farms<sup>☆</sup>

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## Abstract

Increases in labour productivity are essential factors, as well as technical effectiveness, for the competitiveness of pig farming. However, the preferences of farmers for controlled (i.e. limited) daily working hours or available days for vacation also increase. The objective of this study was to explore how these preferences about work might be associated to specific combinations of practices or affect performance. The study was carried out by direct investigation of the stockbreeders. Data analysis used factorial analysis to identify relationships between practices, labour productivity, sow productivity and work load distribution. Results showed independence between sow productivity and labour productivity. Three independent types of preferences about work load distribution were identified: the limitation of density of daily work, the avoidance of insemination activities during the weekend and the avoidance of farrowing supervision during the weekend. These preferences about work load distribution were mainly related to weaning, oestrus detection and insemination techniques. A relationship was also seen between farrowing and cross-fostering techniques, and labour and sow productivity. Results suggest that preferences about work load distribution influence the choice of reproduction practices without influencing performance. Finally, concerning the labour productivity, it was linked with some specific techniques at farrowing but the results also indicated that it was mainly related to the size of farrowing batches. © 2007 Elsevier B.V. All rights reserved.

**Keywords:** Farm management; Work planning; Survey; Factorial analysis; Reproductive performance

## 1. Introduction

As most of the other animal productions, pig production is facing pressures on the farmer work. The first pressure is on labour effectiveness which is an essential factor, with technical effectiveness, of pig farming competitiveness: the average number of sows per Annual Work Unit (AWU)

is continuously increasing (by 80% between 1990 and 2006 in France; IFIP, personal communication). The second pressure is relative to the work load distribution, in relation with the evolution of social norms and values in agriculture. The farmers expect something else from their work than the “peasant toil” where private and work lives are closely mingled (Barthez, 1986; Jean et al., 1988). The farmers now have various attitudes toward work load distribution including the control of daily working hours or the ability to free some days for vacation or weekends (Guillaumin et al., 2004). The development of wage-earning and the reduction of the agricultural family workforce reinforce also the necessity of taking into account the

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duration and distribution of work. Although studies on work organisation are rare in swine breeding, studies undertaken in other sectors of production (ruminants) show that stockbreeders adapt their livestock practices, as well as farm equipment and the composition of the labour force, in their search of new coherences between issues of competitiveness and issues of preserved time (Dedieu et al., 2006). More specifically, technical adjustments can be occasional (concerning a specific unit or period of the year) or profound, such as modifications in the livestock management strategies, notably reproduction strategies (Coumut and Dedieu, 2005). In pig production, the practices at stake refer to the tasks which have a periodic rhythm (Le Borgne et al., 1994) (Fig. 1A) in relation with the reproductive cycle of a farrowing batch (i.e. a group of sows managed together). The major element to manage the distribution of periodic tasks from 1 week to another is the number of farrowing batches in the herd (Caugant, 2002) (Fig. 1B). But the relationship between reproduction management practices on the one hand and control of the daily work duration and preserved weekends on the other is less documented. This paper deals with the changes of work in pig farms, either the research of increased labour productivity or the control of work load distribution within the week. We hypothesise that the increase in labour

productivity might have induced a simplification of reproduction management or have consequences on the herd productivity. We also hypothesise that, as in the other production systems, the pig farmers have various preferences when considering the work in odd hours and in weekends. These various preferences may be related to different reproduction managements and may affect the herd productivity. To test these hypotheses, we have carried out a survey with stockbreeders who had various batch farrowing systems and herd size, so presumably a large variety of management practices and labour effectiveness. The data collected were supplemented by the retrieval of performance data from the Technical Sow Herd Management System (TSHMS).

## 2. Materials and methods

### 2.1. Work and practices analysis

Livestock practices are described in the Livestock Farming System approach (Gibon et al., 1999) by their technical content, their justification and their effect on herd performances. Following previous studies on work organisation in livestock farms (Dedieu et al., 2006) we refer to the ergonomics framework to clarify the relationship between livestock practices and work. Livestock practices refer to “prescribed” tasks i.e. to a protocol

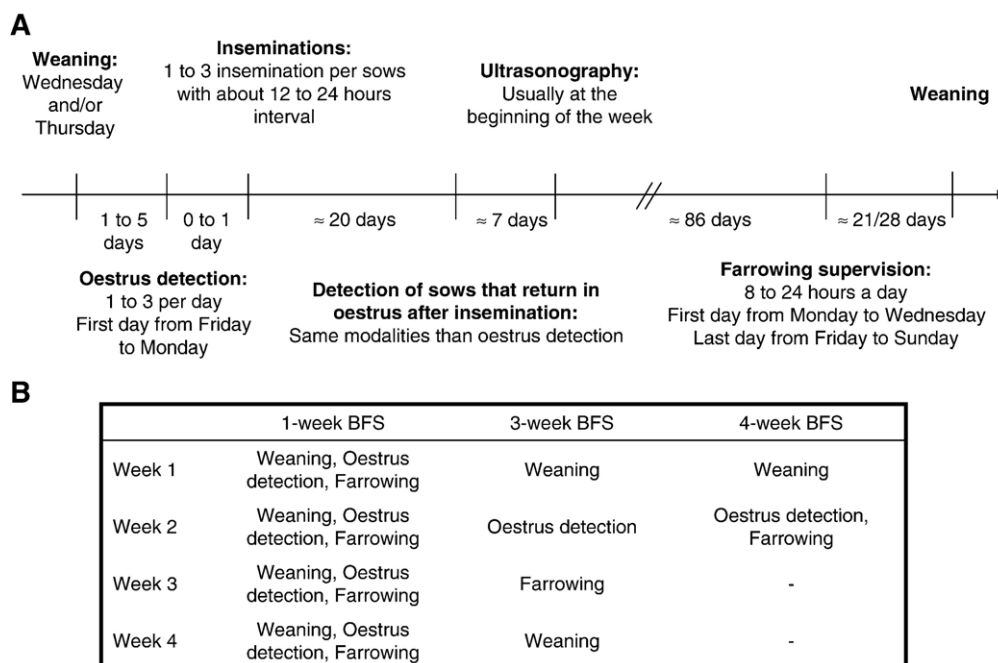


Fig. 1. Periodical tasks occurring in the reproduction unit of a pig farm. The periodical tasks refer to non daily tasks which have regularity. They are opposed to daily tasks such as feeding the animals (Le Borgne et al., 1994). A) Periodical task organisation at the farrowing batch level. The line represents one farrowing batch over the full reproductive cycle. Usual days of each task are written under the task name. Usual time intervals between each task are written under the line. B) Periodical task organisation at the herd level. In the 1-week Batch Farrowing System (BFS), there are 20 to 21 farrowing batches, in the 3-week BFS there are 7 farrowing batches and in the 4-week BFS there are 5 farrowing batches.

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