# Mother Knows Best: The Importance of Maternal Care in Piglets

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**ABSTRACT**

Piglet survival is of importance because it affects the farmer's economy and the welfare of the pigs. There are several factors affecting piglet survival and they are often linked to each other. This paper will focus on how the behaviour of the sow can affect the growth and survival of the piglets and possible causations of differences in maternal behaviour. Sows in intensive production systems have different possibilities to express their maternal behaviour than free ranging sows. They often live in small pens or crates, have fewer choices because of the restricted environment, and are depended on human provided resources. One of the major problems in piglet production is that piglets are crushed by the sow and then dies from traumatic injury or suffocation. Sow behaviour when she lies down or when she has a piglet under her body affects the mortality and the risk of injures on piglets. Also, sow behaviour during farrowing can affect piglet survival in a positive or negative way. There are differences in nursing patterns between sows. The variation in maternal behaviour between sows can therefore be of interest, to find a way to reduce piglet mortality and increase growth.

## INTRODUCTION

Piglet survival is a matter of great importance. It is highly affecting the farmer's economy and is also an issue of pig welfare. Number of piglets produced per sow per year is the most important trait affecting the financial results (Palmo, 1999). Because of that many pig breeding programmes focus on increasing number of born piglets. However, there are more factors involved that contributes to the result. Large litters at birth do not guarantee large litters at weaning. The litter could be reduced during the pre-weaning period due to several factors. Pre-weaning mortality is influenced by litter size at birth but also by many other things such as birth weight, duration of farrowing, dystocia, birth order, thermal environment, nutritional status, disease, sow and piglet behaviour, sex and genetics. This paper will focus on the sow's impact, how her behaviour influences the growth and survival of the piglets.

**Maternal behaviour in pigs:**

- **Nesting:** When a sow is about to farrow, she leaves the group and search for a suitable nesting site. Sows tend to place the nest outside their normal home ranges. She probably does this because she need time alone with the piglets so they can learn to recognize each other and to avoid cross-suckling. The sow then builds her nest using branches, twigs, and sprigs as nesting material. When it is time to farrow the sow lay down in her nest. She seldom leaves the nest during farrowing. However, she often gets up at least one time between the births of the individual piglets, especially in the beginning of the farrowing. When the sow stands, she turns around and nose at her newborn piglets (Petersen, 1990). The first two days after farrowing the sow spend most of her time in the nest. After the first couple of days the time spent outside the nest gradually increase. After approximately seven days the piglets leaves the nest and start to follow their mother. They are then gradually introduced to the family group and live together with the other sows with litters the rest of the time (Strangel & Jensen, 1986).

- **Rolling & Lying Down:** Two types of posture changes of the sow that can cause danger for the piglets are rolling and lying down. Sows spend most of their time during farrowing and after parturition lying on their side (Vieuille et al., 2003). To do so comfortably they have to sometimes change posture, so they are not lying with the same side down all the time, therefore the sow has to roll over. According to a study by Herskin *et al*. (1998), provision of nest material may reduce the risk when it comes to piglet crushing caused by rolling.

- **Savaging:** Sometimes newly farrowed sows can show aggressiveness towards the offspring. This behaviour is known as savaging and can occur even if the sow had shown good maternal behaviour to earlier litters (Chen *et al*., 2008). There are studies showing that savaging is more common in gilts which suggest that maternal experience might have some influence (Harris *et al*., 2003).

**Effects of maternal behaviour on piglet growth**

The sow's behaviour also influences piglet growth. The availability of milk affects as well as differences in the individual sow's nursing behaviour. As earlier mentioned, sows' ability to produce milk varies between individuals but there are also differences in nursing behaviour between sows. Valros *et al*. (2002) found that sows have individual nursing patterns that are repeatable within sow and lactation period. This implies that sows have stable individual

behaviour patterns. They also found that nursing frequency was positively related to piglet growth. Robert & Martineau (2001) found that cross-fostering results in disturbed nursing, increased fighting among piglets and impair piglet growth. Sows with adopted piglets spent less time lying down, snapped more at the piglets and had equally number of successful nursings but more of the unsuccessful ones (nursings without milk let down) compared to sows without adopted piglets. The unsuccessful nursings were mainly because of sows terminating the nursing. There were more fights in litters with adopted piglets and most fights occurred at the udder of the sow. Adopted piglets were most impared in growth and the resident piglets were lighter than the piglets in the control group. Thus, it can be concluded that cross-fostering changes the sows' behaviour and that this may contribute to the impaired growth of the piglets.

**Piglet mortality & Maternal care**

- **Crushing:** One of the most common causes of death during the pre-weaning period is crushing, meaning that the sow lies down or roll over in a way so that she crushes the piglet with her body. Weakened piglets are less responsive and are therefore more easily crushed. The piglets' conditions are depending on several factors such as the physiology and body condition of the sow, availability and quality of feed, diseases, and injuries etc. Most losses due to crushing occur during the first 3days of the piglets' life (Marchant *et al*., 2001).

- **Dystocia:** Dystocia (difficult labour) can also decrease the piglets' pre-weaning survival. The resulting hypoxia (oxygen deprivation), caused by the decreased blood flow to fetus, reduce post-natal viability. Hypoxia of course cause stillbirths but is also associated with hypothermia and reduced post-natal growth among live born piglets, and higher mortality after birth (Herpin *et al*., 1999).

- **Chilling:** Cold stress is a critical factor affecting piglet survival. Newborn piglets have extremely little body fat. In contrast to many other mammalian neonates, including humans, piglets lack brown fat (Trayhurn *et al*., 1989). Brown fat cells have lots of mitochondria and produce large amount of heat. Instead, piglets use other methods to keep up their body temperature like erecting their fur, shivering and increasing their metabolic rate (Stombaugh *et al*., 1973).

## CONCLUSION

There are differences in maternal behaviour between sows, and this has effects on the survival and growth of the piglets. Maternal behaviour is of importance for the production, especially when it comes to non-crated sows. The sow's behaviour is also highly dependent on the provided conditions; her behaviour is affected by the environment and availability of resources. Genetical selection on good maternal behaviour and good health, and improvements in the environment will probably have a positive effect on piglet survival and growth.

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