

Focus points for feeding the hyperprolific sow of the future

The reproductive performance of the sow herd is one of the key factors determining the profitability of the pig industry. Over the last decades, genetic selection for enhanced sow prolificacy has resulted in an increased litter size at birth.

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However, increased litter size is associated with a reduction of piglet birth weight, an increased number of small piglets and lower piglet vitality, all resulting in higher piglet mortality. Thus, by increasing the quantity of piglets born, compromises were made on piglet quality. However, the current market is not asking for more piglets. The market is asking for better piglets.

To assure this quality, Nuscience puts focus on sow longevity, gilt rearing, and piglet quality. By focusing on those three topics, Nuscience is convinced that they can feed the modern hyperprolific sow.

Maximising sow longevity

During the last decades, selection in sows focused on production (growth, lean meat) and reproduction (litter size), but to a lesser extent on longevity. However, increasing

the longevity of sows has both economical and animal welfare benefits. The main reasons for culling in young sows are reproductive problems (conception failure, abortion, no oestrus, low number of piglets) and locomotion problems (lameness, claw lesions). During the later parities, the main reason for culling becomes production problems (low milk production, udder problems).

To prevent the culling of sows and to increase longevity, it is very important to keep up the body condition of the sow. However, due to genetic selection for leanness, sows have less fat reserves and a smaller appetite, which can easily lead to a depletion of body reserves.

Thus, feeding the modern hyperprolific sow is a real challenge and requires insight into sow body metabolism. It is already well described that the sow diet has a large impact on body condition. When sows

consume too much energy during gestation, their body condition will be too high at the end of gestation, resulting in farrowing and lactation problems.

When sows consume not enough energy and proteins, their body reserves will get depleted, resulting in reproductive problems (increased weaning to oestrus interval, decreased follicular development and ovulation rate, and decreased embryonic survival and litter size).

As these are all main reasons for culling, it is thus necessary to apply feeding strategies to maintain body reserves within the optimal zone. The occurrence of sow lameness can also be influenced by sow nutrition. Particularly Ca, P and their ratio are extremely important, as is vitamin D. Also Mg, Zn, Cu, Mn and Fe play an important role in bone formation. Both deficiencies and toxicities of dietary

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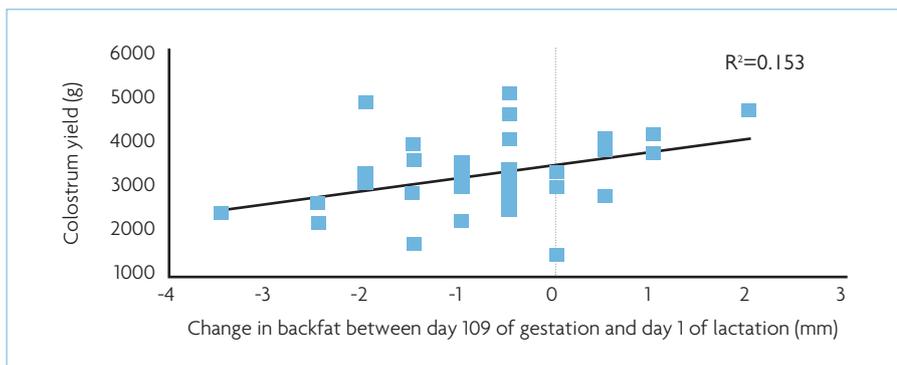


Fig. 1. The relation between colostrum yield and backfat change between day 109 of gestation and day 1 of lactation (after Decaluwé, 2014).

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minerals and vitamins can be detrimental for bone quality.

An optimal dietary balance of vitamins and minerals, with an adjustment for gestation and lactation requirements, is necessary to support the prevention of sow lameness, and increase sow longevity.

Nuscience adapts its nutritional concepts for sows to the increasing requirements of the hyperprolific sow, in order to improve sow longevity. However, sow longevity will also largely depend on the condition of the sow at the start of her productive life. Therefore, attention to gilt rearing is extremely important.

Gilt rearing: giving your sows a head start

One of the main factors that influences sow longevity is the rearing of gilts. Often, not much attention is paid to gilt rearing in sow husbandry. However, the gilt is the future of the sow farm and gilt nutrition will definitely influence her lifetime performance and longevity.

In some markets, it is still too often common practice that gilts for reproduction are fed the same diets as gilts for fattening, but the objectives for fattening versus reproduction gilts are very different. Whereas gilts for fattening are fed

to optimise growth, gilts for reproduction need to be fed to optimise lifetime reproductive performance.

Gilts for reproduction need a specific rearing diet and should not be fed as fattening pigs. It is important that these gilts can build up body energy reserves, which they can utilise during lactation when dietary intake is not sufficient.

Furthermore, protein deposition needs to be slowed down, to ensure good bone mineralisation, strong limbs and good condition before service. Considering back fat thickness, studies are contradictory, but in general, gilts with somewhat more back fat (not too fat!) have a higher longevity.

Piglet quality over piglet quantity

Another attention point in sow nutrition is piglet quality. High piglet birth weights and litter uniformity are crucial for piglet survival and piglet performance before and after weaning. It was demonstrated that for every 100g increase in mean piglet birth weight, the survival of live born piglets increased by 3.1%. Furthermore, for every 1% reduction in within-litter birth weight variation, piglet survival increased by 1.1%.

Good piglet quality starts during the lactation of the previous litter. Within-litter variation in piglet birth weight is the consequence of within-litter variation in

early embryo development, which in turn reflects variation in follicle and oocyte development.

Studies have shown that sows with severe body condition loss during lactation have suppressed plasma insulin, IGF-1 levels and follicle development at weaning, resulting in a compromised litter uniformity at birth. Hence, litter uniformity is already partly determined during the pre-mating period and good sow nutrition and body condition in this period is therefore crucial.

Also colostrum and milk production are essential to obtain high quality piglets. Piglets need colostrum to deliver energy and passive maternal immunity. As colostrum yield is not correlated with litter size, the selection for increased litter size has led to a decrease in the available colostrum per piglet.

Approximately one third of the sows do not produce sufficient colostrum for their litter, which creates a great challenge.

First of all, good development of the mammary gland is important. Mammary gland development can be altered by many factors including nutrition and endocrine status of the gilt or sow. Sow nutrition can also affect colostrum and milk production. Maintaining good body condition of the sow is also crucial here.

Studies have shown that the use of body reserves during late gestation is correlated with colostrum production, and that a negative energy balance the week before farrowing should be avoided (Fig. 1).

Conclusion

Feeding the hyperprolific sow is a real challenge. In sustainable and profitable pig production, focus should shift from maximising the number of piglets born per litter, to the number of quality piglets reared per lifetime. Therefore, Nuscience is focusing on sow longevity, gilt rearing and piglet quality in its sow nutritional concept. ■

References are available from the author on request