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Swine Newsletter

Selected Articles

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1- Colostrum intake: review of its impact and the factors of variation

A literature review by a French-Canadian team of authors recalls that a failure of piglets to achieve an adequate colostrum intake is the main cause of death within the first days of life.

The authors recall that 200 g of colostrum per piglet during the first 24 hours after birth is a recommended minimum, with 250 g being quoted as target. Recent findings led the authors to underline that, in most sows, colostrum secretion ends between 12 and 24 h post-partum; colostrum is only "freely available" for the first 12 h of life of the litter.

Concentrations of IgG in colostrum are reduced by 20% within 4 hours after the onset of parturition. On this basis, at least one-third of current sows cannot meet the target of 250 g colostrum ingested within 24 h by the entire litter. Also, the larger the litter, the smaller the chance of ingesting an adequate amount of colostrum, especially piglets with a low birth weight, regardless of the birth rank.

The intake capacity of piglets may reach 700g colostrum within 24 h, but an intake over 250 g does not lead to an increase in plasma IgG levels.

In conclusion, the authors recommend early postnatal assistance to the weakest piglets over the first 24 h of life, including the delivery of energy-rich pastes or preserved colostrum and oral re-hydration.
The impact of maternal nutrition on the uniformity of piglet birth weight was not found to be convincing. Although it is possible to modulate the volume of colostrum yield, this is based on very few studies with little detail. However, the colostrum lipid and IgG levels can be influenced by nutrition, even if only two publications describe an impact on the IgG plasma concentration in piglets. Therefore, the consequences of nutritional strategies on piglet performance "need to be investigated further," according to the authors.

Quesnel H. et al., Colostrum intake: Influence on piglet performance and factors of variation. Livestock Science, 2012, 146 (2–3) : 105-114

ISPAIA's comment: Nutritional strategies to increase colostrum IgG levels sound attractive. However, it should be remembered that this refers to the total IgG without knowing against what the increased IgG is directed. To be convincing, further studies should make sure that these additional IgG are not directed against the nutriments used.

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2- Hyperprolificity: influence of the weight of suckling piglets on the performance of primiparous sows and their litter

A Brazilian study examined the effect of piglet weight and variation in weight at cross-fostering on piglet and sow performance. The study only included primiparous sows,

but their reproductive performance was monitored until the second farrowing. The working hypothesis of the authors was that heavier litters at cross fostering could result in a high body reserve mobilisation, which in turn could affect the litter performance and/or the reproductive performance of the sows. The study was performed on a farm with 5,000 sows in the south of Brazil (Landrace x Large White - DanBred® line), between January and April (hot season, subtropical region). The farrowing house consisted of 16 rooms with 64 farrowing crates in each. Farrowing was induced.
Three groups of primiparous sows with at least 14 teats were formed: those with 'light' litters with 14 light (1.0-1.2 kg) piglets (n=31); with 'mixed' litters with 7 light piglets and 7 intermediate (1.4-1.6 kg) piglets (n=32) and with 'intermediate' litters with 14 intermediate piglets (n=31). All litters were composed of adopted piglets that were cross-fostered within 24 h after birth. The body weight of sows and piglets (individual weighing) was measured four times between day (D) 1 and D19 after farrowing. Backfat thickness of the sows was measured at D1 and D19.
The authors found no significant effect ($p>0.1$) of the interaction among litter composition and weight gain of litters, bodyweight loss of sows and average daily food intake of sows.
Nor was there a difference among groups in losses of body reserves of sows between D1 and D19. However, the percentage of sows showing oestrus until day 7 after weaning was lower in the 'intermediate' group ($p=0.03$), and the weaning to oestrus interval tended to be higher ($p=0.08$). The authors interpret this as a result of suckling, which, in sows with heavier and livelier piglets, is a more potent inhibitor of LH secretion than the catabolism. Differences in the second litter size among groups were not observed and farrowing rates were similar.
The absence of difference in weight gain between suckling piglets of different groups suggests that the milk yield of primiparous sows was insufficient for an adequate growth of the 'intermediary' – or possibly even heavier – piglets. It is therefore logical that the loss of body reserves was comparable between groups. The authors conclude that 'intermediary' piglets may not be appropriate for modern primiparous sows, (especially during the hot season) and that litters composed of light piglets (or a lower number of heavier piglets) seem to be more appropriate for nursing by primiparous sows.

Bierhals, T. et al., Influence of pig weight classification at cross-fostering on the performance of the primiparous sow and the adopted litter. Livestock Science 2012, 146 (2–3) : 115-122

ISPAIA's comment: This paper was selected as it concerns certain questions from the field and discusses the key points of lactation.
Many studies have shown that, the larger and/or more vigorous the litter, the higher the sow's milk yield. This is true until reaching the sow's maximum potential.
This study, which found that the primiparous sows did not have a milk production adapted to their piglets of 1.4-1.6 kg ('intermediate') bodyweight, suggests that the maximum production has been reached. This may be so. Each sow had a large litter (14), while it should be remembered that the mammary glands of primiparous sows is less developed than those of multiparous sows, which leads to a lower milk production.
However, it may come as a surprise that, even if the findings are not statistically significant, they are similar to those originally expected by the authors. Primiparous

sows with light litters lose less bodyweight, return to oestrus earlier and their piglets grow less fast than those with heavy litters. Mixed-litter sows have intermediary results.
Without ignoring the authors' arguments (in particular the inhibition of LH secretion depending on the intensity of suckling), it might be suggested that the number of sows in the study (less than a hundred), divided over three groups may not be very large, and limit the statistical power of the study. The study size only showed a difference in ADG of 350 g. There was 130g difference between light and intermediate litters.
Another factor was the hot season, as high temperatures limit the milk yield.
The performance of the mixed litters is also noteworthy. Without being able to say, which piglets contributed most to their overall growth, they have an ADG close to that of the intermediate litters (2.65 kg vs. 2.68; 2.55 for the light litters) without a negative impact on the mortality rate in the adoption-weaning interval, which are all very low: light 5.8%, mixed 5.6%, intermediate 4.8%. This might be explained by the hypothesis that the massage of certain teats by heavier, more vigorous piglets increases the overall stimulation of the milk gland, causing all teats to yield more milk, benefiting the entire litter.

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3- Detection of M. hyopneumoniae in the nasal cavities of 15% of pig farmers

A cross-sectional study was carried out in the field in Germany, to assess the capacity of *Mycoplasma hyopneumoniae* to colonise the nasal mucosa in pigs and humans. A total of 108 breeding herds with over 100 breeding sows in the north-western part of Germany participated in the study.

Nasal swabs were collected from 20 piglets, at the age of weaning in each farm (at least two piglets per litter), while each farmer was asked to take a swab from the cavity of his/her own nose. A questionnaire, aimed at evaluating the risk factors of airborne transmission of *M hyopneumoniae* was also distributed to the farmers.

Sixteen farmers were tested positive for *M hyponeumoniae* by real-time quantitative PCR. The most important risk factor for positivity of farmers was the positive *M hyopneumoniae* PCR on nasal swabs from suckling pigs at weaning (OR: 5.7; P=0.01), regardless of the size of the farm. This colonisation at weaning was correlated with high infection dynamics of *M hyponeumoniae* within the herds.

As PCR cannot distinguish between viable and dead bacteria, a true colonisation of farmers' nasal mucosa could neither be confirmed nor ruled out. The authors point out that the farmers themselves could be involved in the transmission of *M hyopneumoniae*.

Nathues H. et al., Detection of Mycoplasma hyopneumoniae in nasal swabs sampled from pig farmers. Veterinary Record, 2012, 170 (24) : 623-623

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