Providing optimal conditions for piglets in the farrowing unit

One of the performance parameters important to a pig producer is the number of healthy piglets weaned/sow/year and their weaning weight. Due to improved genetics, it is possible today to find production systems that deliver more than 30 piglets weaned/sow/year.

by Dr Inge Heinzl and Dr Fellipe Barbosa, EW Nutrition. www.ew-nutrition.com

In order to increase a sow's productivity, strategies aimed at management, feeding, and health of both piglets and sows must be combined.

Limited immune protection

It is generally known that piglets are born physiologically immature. Their energy reserves are limited. They only possess 1-2% fat, the main part of it subcutaneous or structural fat protecting organs, joints and skin. Thus, piglets depend on the glucose of the glycogen deposits of the liver as the main source of energy. This energy supply only meets their requirements for the first few hours.

Besides that, at birth piglets can not count on maternal antibodies. There is no transfer of these protective cells within the womb as found in humans. This transfer is not possible in sows due the construction of their placenta. Therefore, piglets are born without any immune protection and rely on an early supply of antibodies from the maternal colostrum.

During the first 24-36 hours after birth, antibodies are absorbed in the intestine and pass directly to the bloodstream. The intestinal barrier then closes. Also, the content of antibodies in the colostrum decreases with every hour after birth. By this stage the amount of protective cells in the intestine, the main site of pathogenic contamination, is virtually zero.

Prevention is the method of choice

Regarding this difficult situation in the early stages of life, it is clear that the farrowing unit should be as comfortable as possible for the piglets:

- It should be warm, as low temperatures contribute to hypoglycaemia. The search for body heat at the sow additionally increases the risk of crushing, one of the main causes of losses.
- It should be clean and pathogenic pressure should be as low as possible. Due to their poor immune status, piglets are susceptible to diarrhoea-causing pathogens like E. coli and Clostridium perfringens during the first days of life.

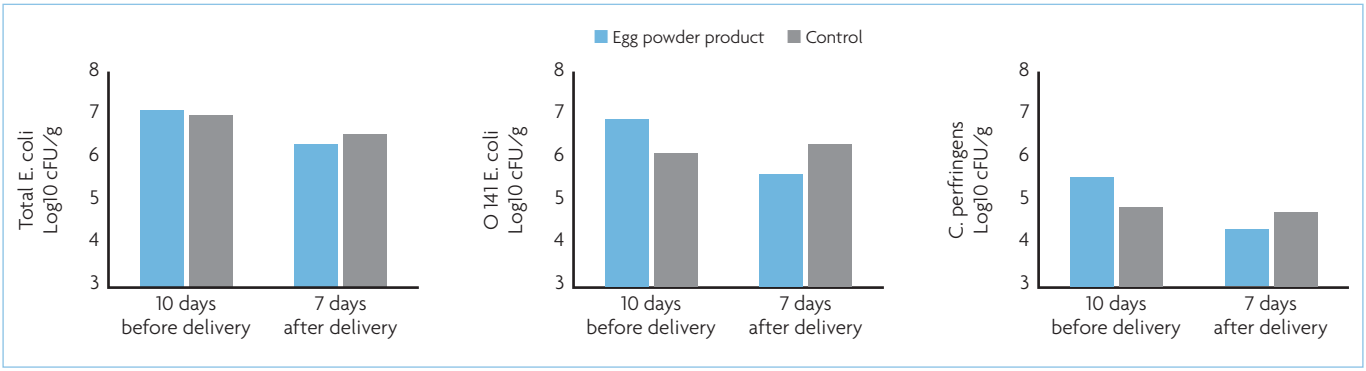
Regarding temperature, a problem has to be solved as sow and piglets have different requirements. A heat lamp especially for the piglets could be a good solution.

In order to meet the hygiene requirements, the first step is careful cleaning and disinfection of the farrowing unit before bringing in the sows.

Cleaning helps but producers have to understand that the sows are continuously shedding pathogens in their faeces and the piglets come into contact with them. In fact,

Continued on page 17

Fig. 1. Amounts of total E. coli, O141 E. coli and Clostridium perfringens in the faeces of sows 10 days before delivery (before the first application of egg powder product) and seven days after delivery (after the last application of egg powder product).



Continued from page 15
sow's manure is the first source of contamination for the new-born piglets.

Two approaches are possible:

- Supporting the piglets to deal with these pathogens.
- Keeping the number of pathogens excreted by the sow as low as possible.

Regarding point number one, it is of the highest importance to provide the piglets with antibodies from the maternal colostrum. Additional support could be offered through the use of immunoglobulins from eggs. They have already been proven to be quite efficient in supporting gut health. Yokoyama et al. (1992 and 1997) showed that immunoglobulins from eggs offered to piglets bind to pathogens within the intestinal tract. They show efficiency in supporting piglets to cope with pathogens, decreasing the incidence of diarrhoea as well as mortality and increasing daily gain.

In order to achieve the second one, the reduction of pathogenic pressure, there are several solutions. The feeding of natural substances like probiotics or secondary plant compounds in order to improve gut health could be a possibility. Beneficial microbes like lactobacilli or bifido bacteria compete with pathogens like E. coli or clostridia for nutrients and prevent their proliferation. Additionally, antimicrobial effects are attributed to different phytomolecules such as carvacrol and cinnamaldehyde. Another possibility could be the application of egg immunoglobulins to the sow. As mentioned above, egg immunoglobulins bind to pathogens within the gastrointestinal tract.

The idea now was to check if these immunoglobulins from the egg could also bind pathogens in the sow's gut. By the generation of harmless complexes, it could be possible to reduce the pathogenic pressure for the piglets. For this purpose, a trial was conducted in Japan to check this theory.

Trial

For the trial, two groups of eight sows each were used. The sows of the control group received standard lactation feed, the trial group was also fed standard feed but additionally a supplement containing egg powder with immunoglobulins (dosage 5g/sow twice daily) on top during the last 10 days before and the first seven days after delivery.

The faeces of the sows were obtained by rectal stimulation (in order to get no contamination from the environment) on day 10 before and day seven after delivery. The amount of colony forming units (CFU) of total E. coli, E. coli O141 and Clostridium perfringens were determined.

The product used in the trial was Globigen Sow from EW Nutrition. The results are shown in Fig. 1.

At the beginning of the trial, before the application of the egg powder product (EPP), both groups showed nearly the same level of the evaluated pathogens with a slight disadvantage for the EPP group.

After 17 days of use of the EPP, a reduction in the colony forming units of total Escherichia coli, Escherichia coli O141 and of Clostridium perfringens could be seen. The sows of the EPP group showed a lower level of pathogens in their excrements than the sows of the control group.

Conclusion

It is important for the producer to understand what adversely influences the results on the farm. One consideration is to improve farrowing unit conditions towards the piglets, aiming at reducing pre-weaning mortality.

The results of the trial showed that the egg powder product supplied on top to standard sows' diets substantially reduced the amount of pathogenic colonies in sow's manure.

The reduction on pathogenic pressure and therefore the incidence of diarrhoea may be an alternative for increasing the profitability of piglet producers by increasing the number of healthier piglets weaned/sow/year. ■