

Managing sow reproductive performance through genetics, nutrition and health

Merial Forum reports on factors affecting swine reproduction.

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Improving the performance of sow reproduction requires attention to health, genetics, nutrition and management factors, according to speakers at the fifth Merial Swine Forum, held in Budapest in April.

Speakers from around the world addressed a range of topics from understanding herd performance to disease management, from issues of feed contamination to managing large litters. The common theme was to understand the challenge and plan ways forward across a wide range of disciplines.

What to measure

The most basic challenge is defining a meaningful measure of the performance of a breeding unit. Metrics can range from the number of piglets born at a single farrowing to number of piglets weaned across a sow's lifetime. Too often metrics can provide a false impression, claimed Dr. Sasha Gibson of the Fairmont Vet Clinic in Missouri, US.

"You cannot manage, what you cannot measure," she stated. In her view, the key was pigs produced per sow per lifetime.

However, this measure must be comprehensive, taking account of gilts that have failed to ever breed and empty sows kept in the herd before culling. The average for herds in the Northern United States between the years 2000 and 2010 was 34.

Sow reproduction

Dr. Enric Marco Granell, Marco Vetgrup, from Spain spoke about the importance of reproduction performance for pigs. Key factors include the high price of feed and the low level of margins for producers. However, he made the point that hyperprolific sows alone do not guarantee high productivity. Dr. Marco's preferred method of measuring reproductive performance is the number of Non Productive Days (NPD) and he demonstrated how this can relate to increased profitability.

Professor Hans Nauwynck from Ghent University spoke about viral reproductive problems in sows. He described the mechanism of the normal process of gestation and birth, and the changes that take place in the sow to ensure that this process proceeds successfully. He explained that different virus can affect these processes and induce reproductive problems. Viruses may affect normal gestation in two ways. They may cause reproductive problems in an indirect way when they replicate in distant areas, or in a direct way by replicating in the genital tract and/or embryonic or fetal tissues. He also presented an approach to diagnosing viral reproductive failure.

Professor Nauwynck explained that, depending on the condition of the foetuses, abortion at different stages of gestation can be indicative of either SIV, or ADV or CSFV; stillbirth, Mummification at birth,

Embryonic Death and Infertility (SMEDI) is indicative for PPV, PCV2 and PEV; and late abortion or early farrowing is typical for PRRSV.

Pig breeding

Improving performance begins with selection of breeding stock. Dr Thierry Solignac brought revolutionary thinking to the Merial Swine Forum. A vet and nutritionist with Brittany-based Triskalia, Dr Solignac has been studying the impact of back lean, rather than the conventional back fat, measurements. The past 25 years have seen a significant reduction in back fat in the French herd and a corresponding increase in back lean. While attention has been paid to reducing back fat, the implications of highly muscled sows has not been given so much consideration.

Taking ultrasound readings of the back fat and back lean of hyperprolific sows, Dr Solignac's studies show that high levels of back lean can lead to extended farrowing periods and increased piglet loss. His studies continue, but he believes a good understanding of the back fat: back lean dynamics can decrease many problems like mortinatality, sow mortality; shoulder sores ...and increase weaning efficiency.

Management of gilts entering the breeding herd was a topic covered by Dr. Kazimierz Tarasiuk of PIC. Long-term performance will be affected at this stage and the PIC aim is to retain at least 75% of animals to parity 3. Nutrition is important and feed intake should be maximized with a view to attaining body weight of 136-145kg for PIC genotypes by breeding. Service at the second heat for gilts aged 200 to 210 days is the target.

Much of the data presented at the Merial Forum reflected short longevity of sows in the herd, with many failing to survive beyond the third parity. This impairs herd performance which is why Dr. Giovanni Loris Alborali of Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia Romagna - Brescia focused his paper on reproductive disorders. He described four types of disorders. The first can happen at any stage, the next occurs at non-reproductive stages, the third in early pregnancy and the fourth in late pregnancy. Effective diagnosis from field observations and laboratory tests of likely causes is crucial to address the challenge. It is also important to review data over time to look for underlying trends in disorders and performance.

Reproductive disorders and mycotoxins

One increasing cause of reproductive disorders is the rising incidence of mycotoxins in feed supplies, an issue addressed by consultant Professor Maximilian Shuh, from the University of Veterinary Medicine of Vienna, Austria. He reviewed the range of potential problems that various infections can cause at very low concentrations. For instance, zearalenone can mimic oestrogen and lead to false pregnancies; while zearalenone and DON (Deoxynivalenol) together can lead to abnormalities such as splay legs.

It is important to know both the components of any feed and the countries from which they are sourced, as different mycotoxins occur in different parts of the world.

A range of viruses threaten reproductive performance, especially PCV2 and PRRS. Danish vet Dorte Risum from the Porcus Swine Practice explained how the use of Circovac had improved herd

performance. In 2009 she was seeing stillbirths rising and a reduction in viable new born piglets on a 220 sow herd. The unit began vaccination at six and three weeks before breeding gilts, and at six and three weeks before farrowing in sows. Live born piglets increased from 14.85 to 15.78; still births fell from 1.95 to 1.46 and piglets/sow/year rose from 28 to more than 30. An added bonus was a significant reduction in the use of microbiological treatments.

Italian vet Dr. Roberto Bardini, from Trouw Nutrition, also addressed virus management, especially using Progresis to help in acclimatising gilts to the challenge of PRRS. He stressed the importance of checking PRSS levels in gilts before moving them to breeding units. Defending the costs associated with analysis and treatment, Dr Bardini pointed out that each abortion equated to a loss of €544.

Dr. Eveline Willems from Topigs in the Netherlands described the efforts to raise health status across the national herd. Topigs, which produces around 210,000 replacement gilts a year, have a four stage vaccination programme. At 12-14 weeks for erysipelas; at 16-18 weeks, an erysipelas injection plus Gripovac® 3; at 20-22 weeks a second Gripovac3 plus PRRS vaccination and finally after 27 weeks a further erysipelas and parvo virus treatment.

Comparing 2009 to 2011, this approach has raised live births from 13.3 to 13.8 and piglets weaned/sow/year from 27.7 to 28.8.

The effect of abortion on herd performance was addressed by Dr. Juan Luis Ubeda, Global Technical Manager of Magapor in Spain. Hyperprolific sows demand high care and where abortions occur in a herd it is important to understand the nature of the abortion. Although he recognized it is not that easy and in Spain a recent study showed that no cause was found for almost two thirds of abortions. Where foetuses abort, it is important to examine whether the piglets are mummified – indicating early death within the womb, or born still fresh indicating death near to parturition.

Increasing fertility leads to increased litter size and Danish expert Dr.Flemming Thorup of the Danish Agriculture and Food Council reflected on his country's experience. Denmark has some of the largest litter sizes in Europe. This presents a challenge of keeping as many as possible alive to weaning.

In his view, all piglets should remain with the sow for the first 12 hours to maximise opportunities to receive immunoglobulin from colostrums. Then a decision has to be made on how many piglets the sow can rear, which is dictated by the number of viable teats. Then both runts and large piglets should be removed in separate groups and put on to nurse sows, ideally animals at second parity. Dr. Thorup believed increased productivity could be achieved by paying attention to runts.

Commenting on the Forum, Merial Animal Health's Swine Technical Director (EMEA), Dr. Thais Vila said what had become clear was the complex challenge of managing reproduction in swine.

“We recognize reproduction performance is the key to profitability, but our speakers have highlighted how many different factors need to be considered. To bring all these experts together has been helpful to bring together different strands of research and practical experience. Our delegates will be taking

back a significant amount of new information to their research centres and veterinary practices, which we hope will help to raise performance for the industry which Merial is committed to.”

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