Claw lesions and sow housing systems

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With the use of group housing, particularly group housing on slatted concrete floors, we have seen an increase in the amount of lameness and concomitant claw lesions in sows.

Though there are many beneficial aspects to group housing, lameness problems must be addressed correctly. Claw lesions and lameness can lead to a cascade of problems. A lame sow during lactation will eat less feed and they are more likely to be culled at an early age.

Lameness affects the subsequent performance of the sow leading to reproductive inefficiencies warranting removal from the herd even though it may not be removed from the herd for lameness itself.

There are different housing, management and nutritional causes for lameness in pigs. Factors such as group housing, static or dynamic groups, slatted or solid flooring, and the use of bedding can affect the level of lameness in a swine herd.

There are numerous studies pertaining to dairy cattle that demonstrate the association of hoof lesions with these factors.

Claw lesions in pigs may cause lameness immediately due to the pain associated with the lesion or may act as an entry point for infections that spread upwards, affecting the internal structures of the foot.

Group housing obviously makes high demands on the locomotor system, particularly the feet of sows. It has been reported that about 80% of lameness in these systems is associated with foot problems.

High prevalence of lesions

Despite the high prevalence of claw lesions in pigs (80-90% of sows in breeding herds have some form of claw lesions) and the reported link between hoof lesions and lameness in cattle, not much effort has been placed on the prevention and management of claw lesions in pigs.

Although sows with claw lesions severe enough to cause lameness may be culled, most of the claw lesions remain unaddressed in sows.

Claw lesions are of various types and prevalence.Of particular importance, due to their high prevalence and association with lameness, are cracks of the outer wall and white line lesions (see photographs below).

In one of our studies at the University of Minnesota, we explored the relationship between claw lesions, lameness and housing systems (individual stalls versus group pens with electronic sow feeders (ESF)).

We demonstrated that claw lesions were more severe in lame sows than in non-lame sows.

Among lame sows, 20% had a total claw lesion score (a composite score considering both number and intensity of lesions) of less than 10, whereas 40.3% of non-lame sows had a total claw lesion score greater than 10. Approximately 7% of non-lame sows and 15% of lame sows had a total claw lesion score greater than 20.

Another interesting point in our analyses was the striking difference in the severity of claw lesions among sows housed in individual stalls and in group pens with ESF as shown in Fig. 3.

Both systems had identical fully slatted floors, genotype and feed source.

Approximately 9% of sows in stalls had no claw lesions, whereas there was no sow without claw lesions in pens with ESF.

The proportions of sows with a total claw lesion score of greater than 10 were 14.7% and 62.2% in pens with ESF and stalls respectively, while 14.7 % of sows in pens

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Left, a vertical crack in the sidewall of the claw and, right, a white line lesion (photographs courtesy of Zinpro Corporation).

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with ESF and 1.2% sows in stalls had a total claw lesion score greater than 20.

A regression analysis indicated that the sows in pens with ESF were 22 times more likely to have a greater than median total claw lesion score compared to sows housed in stalls.

A claw-area specific regression analysis indicated that sows housed in pens with ESF had higher likelihood of all types of claw lesions (lesions on side wall, heel, white line, junction between sole and heel, sole and over-grown heel) (Fig. 3).

The likelihood of sidewall lesions, heel lesions, over-grown heel, white line lesion and lesions at the junction between sole and heel were, respectively, approximately 10, 3.5, 5, 2 and 5 times higher in sows housed in pens with ESF than in stalls during gestation.

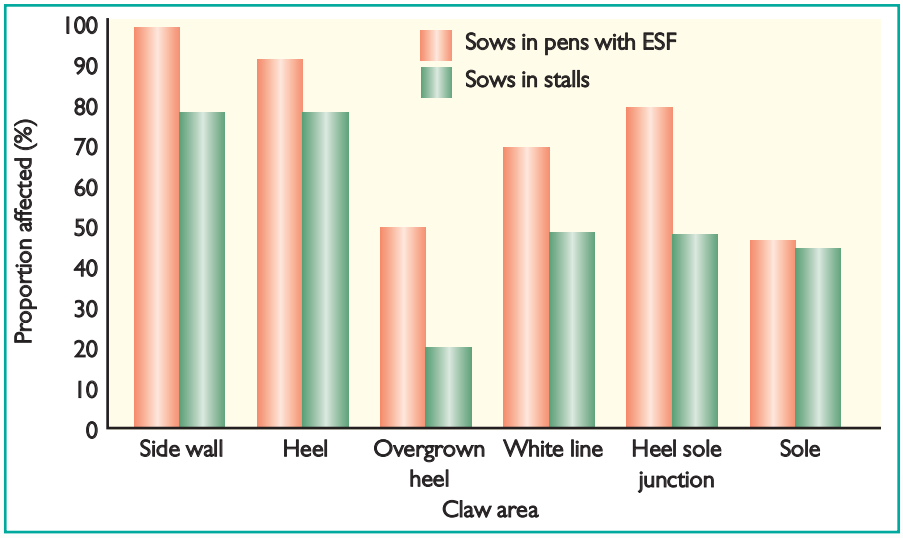

Fig. 3. Proportion of sows with lesions on different claw areas housed in pens with ESF and in stalls.

Major problem in the EU

In the EU, sow lameness also remains a major problem, ultimately increasing culling rates.

By 2013, all European Union countries will require gestating sows to be farmed in group housing systems. Fully slatted floors are not permitted for gestating sows, thus partially slatted and solid concrete floors, or bedded floors (with or without ESF) are commonly used.

In an effort to learn the prevalence of claw lesions a Dutch study group was founded in 2005. 'Sows in group housing with feeding stations and concrete slats' was an initiative of the Centre of Innovative Farming at Sterksel, Topigs, the veterinary faculty of Utrecht university and the Veterinary Centre Someren.

The objective of the study group was to identify and record claw lesions of hind feet, in group housed sows. Currently, data from 4586 hind feet (2,293 sows) have been collected.

Some 14% of the feet have overgrowth of the horn in the bulb area and 10% of the feet have overgrown dewclaws.

Long toes are seen in 4% of the feet, in 3% of the feet cracks of the wall are observed and 5% of the feet have skin lesions at the base of the dewclaws, with 1% of feet exhibiting infections of the coronary band.

The claw horn tissue in pigs grows rapidly (about 7-9mm per month) and lesions may disappear.

However, no study has been conducted to assess whether claw lesions in pigs increase or decrease in severity with the advancement of parity. Although we could not focus on the progress of specific claw lesions, an analysis of the data from a commercial swine breeding herd indicated that lesions on side wall and white line in the hind limb lateral claws would increase in severity over a parity cycle.

The high prevalence of claw lesions in pigs and their association with lameness are suggestive of the need to implement appropriate measures to minimise claw lesions in order to reduce incidence of lameness and minimise removal of sows, especially younger parity sows.

Feet First project

In an effort to learn more about foot lesions and lameness, the Feet First Project has been established. This is a group of scientists, veterinarians and nutritionists working in conjunction with Zinpro Performance Minerals, and their findings will be presented at the world's first sow lameness symposium, which is scheduled for April 2008, in Minneapolis USA. ■