Effective management of sows for increased prolificacy

In the pig business, high prolificacy means the ability to give birth to large numbers of pigs. Sows that can wean 12 or more pigs per litter are highly productive. We must consider not only pig count but also pig birth weight, pig quality, and pig viability.

Non-survival to weaning is detrimental to production of the survivable to stay in the herd and produce quality pigs and their quality, ratio live born, pig count per litter, pig quality, and pig viability.

The biological opposition of maternal traits and 'market hog' (terminal) traits has led to the development of 'static cross' genetic programmes where sow lines derive from maternal lines heavily selected for reproductive traits and the sires of the market pigs derive from lines selected for growth, muscling, and market-appropriate conformation.

The gilt that becomes a prolific productive sow is typically the first or second cross of two or three genetic lines, typically Large White, Landrace, or Chester White, that have been selected strongly for reproductive traits.

The crossing of unrelated genetic lines produces hybrid females that optimise genetic potential. The best genetic programs combine generations of data recordkeeping and computer-based BLUP prediction technology with visual evaluation of reproductive soundness.

Developing the gilt

Gilt selection begins when her sire and dam are mated. We know which litters are going to provide future productive females. Gilts have significantly higher dietary protein and amino acid requirements than do barrows, and those gilts that will be kept for breeding purposes should be fed diets that meet their maximal requirements, and they should be raised in sow and litter environments that allow them to grow maximally.

High value gilts should not be fed diets for commercial market hogs. Enhanced levels of vitamins, minerals, phosphorus, and calcium are needed. Traditional gilt rearing methods that starve the gilt, force her to grow slowly, and limit her skeletal development are detrimental to modern genetics. Excessive commercial focus on minimising the cost of feeding replacement gilts is misdirected economy.

Gilts ad-libitum to reach 125-150kg and about 20mm P2 backfat at about eight months of age. Research has shown that gilts fed organic chromium at 400-600ppb during development have more pigs.

Purchase only clean negative stock

Any incoming animals should be isolated for 60 days and retested 30 days after arrival to the isolation facility.

Purchased breeding animals must be seronegative for PRRS and wild-type PRV virus. Herds that are vaccinating for PRRS should buy seronegative animals and vaccinate them as appropriate.

In pseudorabies (PRV) prevalent regions, replacements should be vaccinated with gene-deleted vaccine and test negative for field virus. Where Classical Swine Fever (CSF) is endemic, animals should be free from persistent infection (PI) as determined by PCR. Serology is useless to determine CSF status except for presently rare cases where pigs are vaccinated with the new CSF subunits vaccines.

Vaccination and controlled exposure

Gilts in preparation for breeding should be vaccinated twice for Parvovirus, Erysipelas, and Porcine Circovirus 2 (PCV2). Herds with a history of PCV2 problems should sequence the farm virus and use a vaccine appropriate to their situation.

In regions where PRV, FMD, or leptospirosis are prevalent, vaccinate gilts accordingly. Expose and acclimatise gilts to the sow herd about 30 days prior to breeding.

There exists in all swine herds viruses such as enteroviruses, saporloviruses, and astroviruses that can cause stillbirths, mummification, embryonic death, infertility, and shaker pig syndromes.

It is impossible to vaccinate against these 'SMEDI viruses' but their impact can be minimised by exposing gilts to faeces from the sow herd and to culled sows 30 days before mating, such that the gilts become exposed and immune before pregnancy.

Mating gilts

 Mature gilts should be heat checked twice daily (am and pm) by direct boar exposure, and mated on their second or third lifetime heat. Inseminate gilts at the detectable onset of oestrus and repeat insemination every 12 hours until the end of heat (when she will no longer stand for the boar).

Gestation feeding

The nutritional needs of pregnant swine and their foetuses are not high. A 14% crude protein diet containing 0.65% lysine, 0.9% Ca and 0.7% P is adequate for sows and gilts in all stages of gestation.

Feed a basal level of 2kg gestation diet daily and increase or decrease feeding levels to body condition score 3.0 or P2 backfat 17-22mm at farrowing. Minimum feeding level is 1.8kg/day. Increase feed 500g per day during the last three weeks of gestation. Feeding high dietary fibre during gestation can improve sow satiety, reduce stress levels, and improve foetal growth. Sows need more feed in cold weather and less feed in warm weather.

Vitamins and trace minerals are important. Supplement 750-900ppm choline, 70-100+ppm vitamin E, 5-10ppm folate, 5-6ppm pyridoxine, 200-250ppm Zn, 500ppb biotin, and 50ppb B12.

Producers are well advised to add 0.2ppm organic Se in addition to the typical 0.3ppm inorganic Se (in countries where permitted).

Sows should have ad libitum...
The highly productive sow can be sensitive and susceptible to high mortality rates. Gestation housing should be dry and well-ventilated. Accurate diagnosis is essential in any situation of sow mortality. The most common cause of sow mortality is gastric ulceration due to feeding being ground too finely. Feed particle size should be 600-800 microns. There is no economic advantage to grinding sow feeds more finely than 600 microns. Pelleted feeds are attractive to the eye but are far more likely to cause ulcerations. Do not feed pelleted feeds to valuable breeding swine. The second most common cause of sow mortality is urinary tract infection (UTI). These are usually sudden deaths, but some vulvar discharge may be observed in gestation.

The common causes are water deprivation and alkalinising diets. Urine can be collected early in the morning and tested with common pH paper. Ideal pH should be 5.5-6.5 (slightly acidic). Herds experiencing discharge problems or UTI losses often have sow urine of about eight. In such cases, examine the diet and remove alkalinisers such as bicarbonate. Ammonium chloride added to the diet can acidify urine and is effective along with good water provision in stopping UTI problems. Consult with your nutritionist and your veterinarian.

The third most common cause of sow losses is lameness. Most lameness is rooted in structural problems. Consult with your nutritionist and say that the feed provided to the piglet is not to replace or supplement milk, but just to ‘teach the pig how to eat’. We may call ‘nonsense’ on this. Neonatal pigs are precocious and express natural rooting behaviour that drives them to consume earth to get iron essential for life. They do not need to be taught how to eat earth at birth. Earth, in the form of organic peats, can be offered to pigs on the floor of their farrowing crate, and they consume it readily due to innate grubbing behaviour.

Peat and humic substances can be provided to the pig early in life and then mixed daily with a high quality creep feed which the pig consumes along with the peat, and the pig can thus quickly be transitioned to consuming significant amounts of creep feed by day seven or before.

The economics of feeding a high quality creep feed or milk replacer to a piglet are compelling. The maintenance needs of the pig and more are being met by the sow milk they consume.

That means that, in effect, about 100% of supplemental milk or high quality creep feed can be utilised directly for piglet growth, and it is quite possible to see milk replacers and good creep feeds produce more than likely for every lbg of creep feed consumed.

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