Gilt management 2

Reproductive health

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When we analyse reproduction pathologies we need to think that viruses, bacteria and other factors like mycotoxins or CO_2 may play a role. Depending on the pathogen and the infection time, we may have a sick sow, abortions, a reduction in total born, mummifications, still births, or low weight piglets that will have problems in lactation and also at post-weaning.

Porcine Reproductive and Respiratory Syndrome Virus (PRRSV)

The diagnosis of Porcine Reproductive and Respiratory Syndrome (PRRS) in acute outbreaks in the breeding herd is fairly straightforward, especially if the disease occurs in weaned pigs. In endemic or chronic situations, diagnosis can be very difficult if samples used to detect the virus are limited to foetal tissues.

Virus can be detected in serum, tonsil scrapings, lung lavage fluid and tissues (primarily lung and tonsil) following infection for a variable period of time. Tonsil scrapings appear to provide the best sampling technique with regards to sensitivity and practicality. Detection of the virus in aborted foetuses can be masked by the rapid degradation of the virus that can occur as the foetus autolyses. An alternative sample type is obtained from weak born piglets, which are sampled prior to suckling to prevent test interference by colostral antibodies, and to enable testing for foetal antibodies induced following transplacental infection. In young pigs that are necropsied, lung tissue usually provides the best sample. Detection of viral antigen in tissue is increasingly done by immunochemistry for a variety of reasons including convenient sample preservation (fixed in formalin versus refrigeration or freezing) and the ability to visualise the viral antigen within the tissue and appropriate cell types.

Porcine Parvovirus (Parvo)

Diagnosis of Parvo is fairly direct if mummified foetal tissue is available for testing. Parvo is very durable and the antigen appears to concentrate in the tissues as the foetus mummifies. The most definitive test is direct immunofluorescence (FA). Compared to FA tests for other diseases, the parvo FA is one of the better systems. If FA is not available, testing the tissue for haemagglutinating activity can be used to detect parvo.

Serological testing of dams is fairly straightforward with regard to performing the HI test but interpretation can be very frustrating. The antibody response induced by parvo is somewhat different from other diseases in several ways:

- Following experimental infection, serum antibodies are detectable within 4-5 days and reach their maximum levels within 11-14 days.
- These titers are quite high and appear to persist at very high levels for the duration of the animal's life.
- Because of the high titers in the dams, maternal antibodies in the piglets can be quite high and can persist until 5-7 months of age. The half-life decay of maternal antibodies is 17-19 days. Accordingly, the titer will decline one dilution every 17-19 days.
- Another unique feature of parvo occurs with vaccination. Vaccination of naïve animals induces a relatively low titer ranging from non-detectable to perhaps 1:32. Following subsequent exposure to field virus, the titer DOES NOT increase in most animals. This is contrary to almost every other disease that we deal with. Eventually, the titers may rise to very high levels although reproductive failure appears NOT to be associated with this rise. This is the main reason why a wide variation of titer levels is observed in sow herds.
- Because the virus is ubiquitous in the environment, many gilts become infected prior to mating, which induces lifelong immunity.

In summary, serotesting for parvo in cases of reproductive failure is only useful for excluding the disease, which rarely occurs because nearly all herds are endemically infected. The typical strategy for paired sampling is useless unless the first sample was collected before breeding. The main justification for parvo serology is monitoring the immune status of gilts prior to breeding as a surrogate measure for assessing acclimatisation programs for infections that are ubiquitous in a swine herd.

Leptospirosis

Leptospiral infections are present in pigs all over the world, in intensively managed indoor herds, outdoor herds, backyard pigs and in wild boar and feral pigs. Information about their prevalence comes from serological examination of blood samples or foetal fluids using the classic MAT, or, increasingly, ELISA testing, using antigens which are becoming more serovar specific. PCR is increasingly being used on tissue, urine and foetal material and is also becoming more precise.

There are marked differences in prevalence in pig populations between the high levels of 90% slaughter pigs infected in New Zealand through 20% found in Brazil to 1.2% reported from Poland in individual surveys. Where data are presented on a herd basis, it is important to note that a varying proportion of herds in a country can be free from infection.

The prevalence of infection with different serogroups also varies from one country to another, depending on the presence of maintenance hosts of the organisms and the contact between these hosts and the pig population. Where the maintenance host is the pig (Bratislava, Pomona and, probably, Tarassovi) infections may be transmitted from pig to pig and from herd to herd, with consequent continuing effects on production.